The Iron

INDEX TO READING MATTER A Review of the Hardware, Iron and Metal Trades.

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A New Planer and Matcher.

The Cordesman Machine Company, of The Cordesman Machine Company, of Cincinnati, Ohio, are turning out a new combined planing and matching machine, of which we present an engraving. The machine is especially adapted to use in job shops and planing mills. It will surface, tongue and groove, or joint and rabbet, or when desired the cylinder may be arranged so that flat molding, beading, siding and all other similar work can be made to advantage. The machine has ample capacity for all ordinary work, and it will commend tage. The machine has ample capacity for all ordinary work, and it will commend itself to wood-workers. The frame, with cylinder and roller-boxes, with the large floor support, is cored out and cast in one piece. Any one familiar with wood-working piece. Any one familiar with wood-working machinery will know that a casting of this description is best adapted for strength and strain; it also prevents the possibility of getting out of shape in shipping and if not carefully leveled on the floor. As will be seen from the engraving, the bed is of extra length, and is also cast in one heavy and well-braced piece. It is constructed in such a manner as to produce work that is perfectly smooth and true. The bearings on the side of table into which the frame is fitted are four in number, two on each side, and all are 14 inches long. They are provided with inclined jibs, which are fastened by bolts. Should there be any lost motion in the table at any time the operator can, by simply screwing up the bolts, take up all such wear. Owing to the accurate fitting of the table into the frame, it is almost impossible for the latter to become shaky by the action of the feed rolls and from the weight and jar of lumber thrown upon it while the machine is in motion. The table is raised and lowered by means of a vertical shaft, with a crank placed at the top, in close reach of the operator, and by means of it and the index, which is conveniently placed on the side of the machine, it can be adjusted to suit any thickness of lamber up to 7 inches. The cylinder, with journals, is made of a solid cast-steel forging; it is truly fitted and accurately balanced, and is driven by two belts. The cylinder boxes are very large and long, and are self-oiling. Two adjusting pressure bars (one on each side of the cylinder) are placed very near the cut, and will yield to the inequalities in the surface of the lumber, and pieces 6 inches or less in length can be planed with Babbitt metal. The caps have large oil-cups cast in them. Both upper and lower spindles are ground true and are accurately balanced. They revolve in long cap boxes lined with Babbitt metal. The caps have large oil-cups cast in them. Both upper and lower spindle bars which are securely fastener spindles are so arranged that t machinery will know that a casting of this description is best adapted for strength and

of the best tool steel.

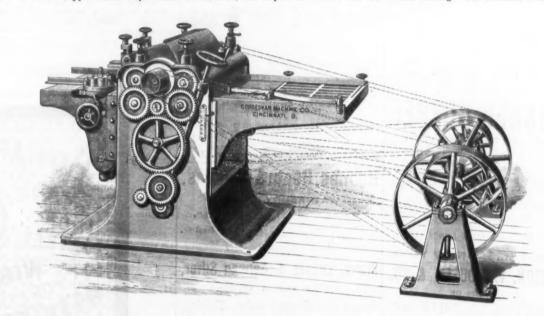
A very simple and effective chip breaker A very simple and effective chip breaker is fitted to the machine, and by means of it the slivering and breaking out of lumber is prevented. The adjustments of the matcher heads are perfect. They move up and down with the table, or can be adjusted so as to receive different width boards by means of the hand-wheels on the side of the machine. To make changes for planing the full width of the machine, the fence, chip breaker and matcher heads can be taken entirely out of the way in a moment's time. The two upper feed rolls, of forged steel, are 3 inches in diameter. These rolls are driven with a special compound yielding gear, and will permit the rollers to rise to such an extent as to take a ½ or ¾ inch cut without becoming disconnected. The rollers are given pressure by steel coiled springs placed at pressure by steel coiled springs placed at the top of the machine, and controlled by means of hand-wheels which are in close reach of the operator. The two lower adjustable feed rolls are 4 inches in diameter, and made of cast iron, fitted with steel shafts. The feed gear is in-dependent, and so arranged as not to interfere with the cylinder pulley, and will give a strong and steady feed. The countera strong and steady feed. The countershaft is 1% inches in diameter, and has three
hangers. These hangers are designed specially for the machine, and are made in box
form with an extra large floor support.
They are cored out and cast solid. The
boxes are lined with the best metal, and
have caps to take up the wear. The
machine is made also with both upper and
lower feed rolls driven by power. The 26inch planer built by the Cordesman Machine lower feed rolls driven by power. The 26-inch planer built by the Cordesman Machine Company is precisely the same in design as this machine, excepting that the table is not quite so long, nor has it the matcher attach-ment.

Scientific Experts as Witnesses.

Referring to scientific experts as witnesses, the Chemical News says:

The expert occupies a totally anomalous position in court. Technically he is, a mere witness; practically he is something between a witness and an advocate, sharing the responsibilities of both, but without the privileges of

pects whatever it does not understand. The late Dr. R. Angus Smith complained of being "contemptuously compelled to herd with thieves and scoundrels in a witness-box." He adds: "I have seen barristers speaking to a scientific witness in such a way as to show that to them a witness was always an inferior person." Surely every person who has been present at a technical trial, or has had to appear as an expert in a



COMBINED PLANING AND MATCHING MACHINE, BUILT BY THE CORDESMAN MACHINE COMPANY, CINCINNATI, OHIO.

a few of the most eminent men in every department of science distinctly and per-emptorily refuse to be mixed up in any affair which may expose them to cross-examina-tion. "I will investigate the matter if you wish it, and will give you a report for your

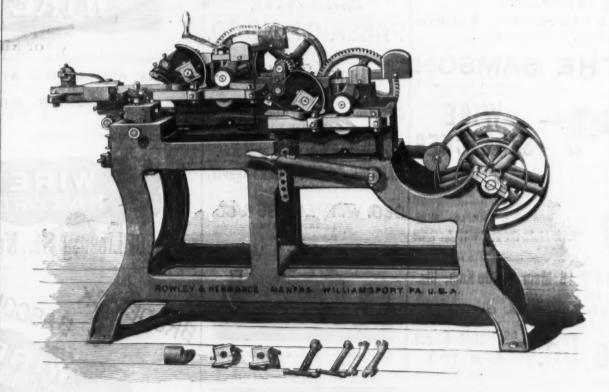
poisoning, a patent or an adulteration case, will be able to confirm this from his own observation and experience.

It may perhaps be cynically hinted that men of science should be willing to bear all this annoyance for the public good. But is if for the public good? In the first place, not a few of the most eminent men in every

Double Blind-Slat Planer.

planer

The Metropolitan Steamship Company, of New York, have contracted with Cramp & Sons for the construction of an iron steam-We show in one of the engravings on this page a new pattern double blind-slat planer which is being manufactured by beam and 34 feet depth of hold, and is to



DOUBLE BLIND-SLAT PLANER, BUILT BY ROWLEY & HERMANCE, WILLIAMSPORT, PA.

guidance, but only on the distinct understanding that I am not to enter the witness-box." Such in substance is the decision of not a few men of the highest reputation and the most sterling integrity. Certainly it is not for the interests of justice to render it impossible for such men to give the court the benefit of their knowledge. Further, the spectacle of two men standing contradicting or seeming to contradict each other in the interest of their respective clients is a grave scandal. Men of the world are tempted to say that "science can lay but little claim to certainty, and is rather a mass of doubtful speculations than a body of demonstrable truth." To us at least there is nothing more saddening than to read the trial of a notorious poisoner, or the report of a great patent case, especially if taken along with the comments of the press and of society on these occasions.

the frame is heavy and is cast in one piece. The machine is strongly geared, and is provided with a powerful feed. The side heads run with long independent belts from the counter-shaft. Objections which have prevailed in other slat planers are overcome in this. The makers state that where slats are fluished in an ordinary four-side molder, with one head working against the grain, about one-third of the slats are left rough the latter. He has to instruct counsel before the trial and to prompt him during its course.

But in cross-examination he is the more open to insult because the court does not see clearly show he arrives at his conclusions, and sus-

diameter, with 54-inch stroke. She will be very fast, and will be similar to the steamtime ago for the same company. She will be named after Herman Winter, the super-intending engineer of the line and Secretary Whitney's naval expert.

by tearing out or being wavy. These are very generally thrown away. In order to save this loss many manufacturers run their slats twice through the machine, so as to finish them with the grain. In this materials and the same of the sa

Japanese Engineering.

Before leaving Japan Prof. J. A. L. Waddell, late professor of engineering at the Government University of Tokio, delivered an address by invitation before the Engineer-ing Society, in which among other things he discussed certain classes of Japanese enhe discussed certain classes of Japanese engineering work. The first topic was the common country roads, a subject which even in this country requires urgent attention. The cause of their unratisfactory condition has been, "and to a great extent still is, that the building and maintenance of these roads are not left to engineers, but are intrusted to subordinate efficiely who have these roads are not left to engineers, but are intrusted to subordinate officials, who have not been educated for such work. Instead of raising the roadbed above the natural surface of the country and avoiding cuttings wherever possible, they have dug it from I to 3 or 4 feet deep, making the road act as a drain for the surrounding country. Not content with attracting as much wester act as a drain for the surrounding country. Not content with attracting as much water as possible to the road, they have endeavored to keep it there by planting close along-side rows of trees with thick foliage, or dense bamboo groves, that most effectually keep off both sunshine and wind, the two great natural maintainers of good roads. Too often even on the better class of roads the side ditches are either omitted altogether or are allowed to fill up, or are not made large enough. Within the last three or four years I have noticed a great improvement in the streets of the Tokyo-fu, but outside thereof the condition of the roads is very little better than it was when I first came to this country. The city streets of the Kyoto-fu are in a wretched state, owing to the fact that large unbroken

city streets of the Kyoto-fu are in a wretched state, owing to the fact that large unbroken stones are employed for surfacing."

After suggesting methods of improvement, the author said: "I cannot too forcibly impress upon you the necessity for having good common roads throughout the country. They will pay for themselves in a couple of years. They will prove equally advantageous to the people of the country and to those of the towns and cities, increasing the load per vehicle or per man at least and to those of the towns and cities, increasing the load per vehicle or per man at least threefold, and reducing greatly the market price of country produce. By their means the prices at which Japanese produce and manufactures can be delivered at foreign ports will be so reduced as to enable the people of Japan to compete with those of other countries in lines hitherto untried. For military purposes good roads in connection with a complete railroad system are an essential, and their existence would reduce the necessary size of the standing army to one-half, thus lowering the taxes for the maintenance of the army and adding to the producing number of the population."

maintenance of the army and adding to the producing number of the population."

On retaining walls Professor Waddell remarked as follows: "The retaining walls of this country, till lately, have been to me a matter of wonder and surprise. Built as they are of single vertical rows of stones shaped into truncated pyramids, how they stand has naveled me heaven measure. The availance.

are of single vertical rows of stones shaped into truncated pyramids, how they stand has puzzled me beyond measure. The explanation of the phenomenon was made apparent a short time ago by a wall in Yokohama, and it is a very simple one, viz., that such walls do not stand for any great length of time. Their standing at all would upset any theory of earth pressure if such a theory still existed." The professor then advises that the empirical rules laid down by the competent authorities be used.

"In respect to railroading," continues the professor, "I would direct your attention to the study of some better means of removing earth than that at present employed, viz., by hoeing or shoveling it into a rope mat which is alung on a pole and carried by two men. Such a method cannot be economical. If man power must be employed for removing the material, it would be much better to use wheelbarrows for short hauls and carts or wagons on tramways for long ones. The methods of pile driving still in use are rather crude and inefficient. In locating lines of railway along the valleys of rivers I notice a proneness to cut into the feet of the side hills in order to avoid confiscating I notice a proneness to cut into the feet of the side hills in order to avoid confiscating valuable rice land. There is no true econvaluable rice land. There is no true economy in so doing, for the hills may develop a tendency to alide; besides, in respect to maintenance, embankments are far more satisfactory than excavations.

'In regard to river improvements. I

would suggest a thoroughly scientific study of the physics and hydraulics of the Japanese rivers, and the more effective protec-tion from flood of the river-bottom farm lands by levees. That the Japanese rivers are unusually hard to control there is no denying; consequently, the subject de-mands even more careful investigation than is given it in other countries. It is possible that in some parts of Japan the movable dams, which are becoming so common in Europe and America, may be advantageously employed for the improvement of river navigation. The highway bridges of this country are still rather primitive. One of the prin-The petroleum wells in China occurring in the province of Ssetchouen are thus referred to by L'Abbé Huc: "When a salt well has been dug to a depth of 1000 feet a bituminous oil is found in it that burns in water. Sometimes as many as four or five large of this country are still rather primitive. One of the principal objections thereto is the shortness of the spans, necessitating the use of so many piles that the water-way is often impeded to such an extent as to cause the destruction of the bridge by washing of the country of the principal objections.

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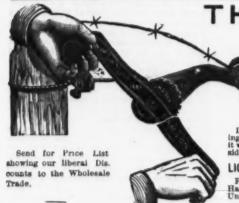
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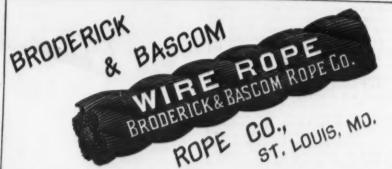
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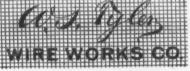
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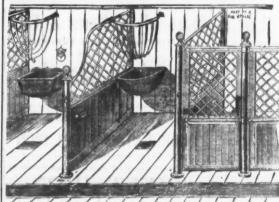


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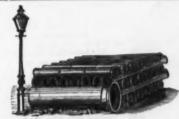
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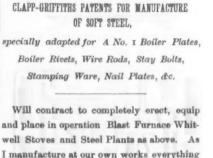
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ANALYSIS OF IRON AND STEEL.

Howe truss bridges are the best, though in America I would recommend them only as temporary structures in districts where as temporary structures in districts where iron is expensive and timber is very cheap. The timber should in all cases be well seasoned. Concerning railroad bridges I have but little to add to what I have said in my "Memoir," except to suggest that you give the system which I advocate a trial." Professor Waddell continues by noting two or three learnings. three later improvements in bridge construc-tion which do not appear in his "Memoir," and also presents some suggestions on piers and foundations of bridges, and especially advises the study of foreign works on the subject. As the only remedy against the teredo navalis is creosote oil, he advocates the establishment of gas works in the prin-cipal cities for the sake of the valuable resid ual products.

New Gold Fields.

The Kimberly fields, in Western Australia, are beginning to send nuggets in to Sydney. Some of these run from half an ounce up to 190 ounces. The gold is only slightly water-worn, so it cannot have traveled far from worn, so it cannot have traveled far from the quartz where it originated. According to the Mining and Scientific Press, a rush has already set in from Western Australia and from New South Wales. Large numbers of diggers, storekeepers and others have found passage round westward, while others from Victoria, New Zealand, &c., have arrived in Sydney, whence steamers are being specially laid on, most of which will call at the Queensland ports on route to pick up additional laid on, most of which will call at the Queens-land ports en route to pick up additional miners. The two places of debarkation are Fort Derby (King's Sound) and Cambridge Gulf. It is stated by some parties that this will be the largest gold field in Australia. It has been estimated by Mr. Hardman, the Government Geologist of Western Australia, that an auriforous area of country, extendthat an auriferous area of country, extending over some 3500 or 4000 miles, exists. The latest information is a telegram from Perth, which states that a miner named Morgan has returned to Port Derby with a

weighing 2½ pounds of solid gold.

The newly-discovered Patagonia gold field extends from Cape Virgin, on the northern shore of the Strait of Magellan, along the Atlantic shore some 50 miles. The gold shore of the Strait of Magellan, along the Atlantic shore some 50 miles. The gold country is easily accessible, and the deposits are known to be rich. There is a gold field also in the Transvaal, South Africa. In the closing week of last year 2560 ounces of gold were received at Natal. Further north rich deposits of gold and baser metals have been found south of the Zambezi. This region is but little known to white men, but if it is as rich as represented, tens of thousif it is as rich as represented, tens of thous-ands of white miners will soon be in Central Africa. Northern Thibet is another region which is known to contain vast quantities of gold, which will very scon be extensively worked. It is an upland region, with underlying rock, and there is from 16 to 20 feet of soil, all of which is auriferous. Then there is gold in abundance in Manthuria. This is a region in China, near the Russian possessions. From Madagascar reports come of wonderful finds. As all these places are at great distances from us, it is difficult to get any definite informa-tion concerning them. The further gold fields are away the richer they appear to be to those who read of them. To none of these places mentioned has a poor man any business to go, with only money enough to pay passage to the fields.

The Navigation of the Warrior River.

Some time since the Manufacturers' Plate and Sheet Steel,

Every description of Light Plates and
Sheets of Steel.

Plate and Sheet Iron.

Plate and Sheet Iron. Horace Harding, U. S. engineer in charge, of the improvement of the Warrior River, calling attention to the statement alluded to.

calling attention to the statement alluded to. Colonel Harding has replied to it at length. We extract from that reply the following:

It may prove interesting and instructive to compare the navigable season of the Warrior with that of the Ohio, and I accordingly give below a table of three columns, of which No. 1 shows, from the records of 22 years, the average number of days in each month during which the Ohio, at Pittsburgh, had 6 feet and over in its channel. No. 2 shows the corresponding table for the Warrior in 1885, and No. 3 the number of days for the same year during which a 10-foot depth existed. I think the year 1885 gives a little better showing for the Warrior than a little better showing for the Warrior than a just average, but I use that year as it hap-pens to be the only full record that I have

and manage !	No. 1.	No. 2.	No.
January	. 18	31	24
February	. 16	28	28
March	. 25	81	23
April	26	30	30
May	. 17	25	13
June	. 8	80	26
July		17	11
August		10	17
September		10	2
October		D	- 4
November		30	387
December	. 17	81	91
Total	155	268	200

From the above it appears that, taking 1885 as a criterion, the Warrior gives more days for towing, even in its present condition, than the Ohio, and that with the contemplated improvements perfected the towing season will equal that of the Eric Canal.

There is a decided improvement in the general commerce of France for the month of May, particularly in the exports of manufactured goods, which amounted to 140,000,000 in May, 1885. The imports gain 89,500,000. In May, 1885. The imports gain 89,500,000. For five months of the year, however, the comparison is not so favorable. The total imports, five months of 1885, amounted to 1,763,468,000; five months of 1886, to 1,737,450,000. Exports five months of 1885, 1,258,478,000; five months of 1886, 1,296,952,000.

The Western Nail Association has appointed a committee to revise the nail card or extras list.

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For Edge and Turning Tools, Taps, Dies, Drills, Punches, Shear-Knives, Cold-Chisels and Machinists' Tools generally.

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For Circular, Mulay, Mill, Gang, Drag, Pit and Cross-Cut Saws.

Sheet Steel

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For Boilers, Fire-Boxes, Smoke-Stacks, Tanks, &c. All our Plate and Sheet Steel being rolled by a Patented Improvement, is unequaled for surface finish and exactness of gauge.

ROUND MACHINERY CAST STEEL

For Shafting, Spindles, Rollers, &c., &c. File, Fork, Hoe, Rake, R. R. Frog, Toe-Calk, Sleigh-Shoe and Tire Steel, &c.; Cast and German Spring and Plow Steel.

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Cast Plow Steel.
Cast Plow Steel.
Cast Plow Steel.
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"Soft Steel Center" Cast Plow Steel.
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of as a reply to Germany's recent arming of her Alsace-Lorraine regiments with repeating arms; but both countries have long been experimenting for this purpose, and indeed at is obvious that if France had not already begun to provide herself with such weapons an order to distribute 60,000 of them in so short a time would be preposterous. As a fact, the armory at St. Etienne altered its tool plant some time ago with a view to making magazine rifles on a large scale. There have been many efforts to change the Gras into a magazine arm, the Robin system of conversion being one, while among other plans experimented with have been the Pariès and Sturla, which utilize to some ex-tent parts of the Gras action.

rifles were made to a certain number of organizations throughout the army, in many regiments and departments, and trials of them were made in competition with the Springfield single loader. The commanding officer of each detachment making these trials drew up a report of the results, with his comments thereon. It was found that in a large majority of the reports the existing single breech-loader was preferred. Nevertheless, the principal faults noted in the magazine arms were such as can be remedied by mechanical improvements or by a careful training of the men in their use. The brief report of General Benét on the trials, rendered a few months ago, declared that he believed that a magazine gun would eventually be adopted, but that the time had not yet come for it.

and has already practically been pushed to success. We find the troops of Sweden armed with the Jarman, a magazine rifle of unusually long range. Austria is preparing to substitute for her somewhat inferior Werndl rife the Mannlieber, which has a removable magazine and avoids the faults of weakness, complexity and costliness sometimes found in such weapons. Russia her hear book but he weapons. sometimes found in such weapons. Russia has been kept back by the great cost of converting into repeaters the multitude of the arms with which her arsenals are loaded. Switzerland is supplied with Vetterliu repeaters, as the little State needs to make the most of her forces. Germany has converted Mauser single-loaders into a magazine arm on a system which attracts the criticism of the experts upon several grounds, and no doubt justly, but which, after all, has the great advantages of being cheap, of using the rifles already in the hands of the troops, and of being manipulated in a manner already familiar to them, so that there is little or nothing to to them, so that there is little or nothing to learn. France has armed her navy for some years with the Kropatchek repeaters, but has been looking for a modification of the Gras for her land troops. Possibly it is the Kropatchek that is to be issued in such haste to 60,000 troops of the line; but it is reasonable to suppose that some one of the many proposed modifications of the Gras has been chosen, and the required changes made. England several months ago ordered the England several months ago ordered the issue of magazine guns for experiment, and now will be spurred on by the decision of Germany. In short, the lesson of the Austro-Prussian war of 1866 is not forgotten. Then the needle-gun, in the hands of disciplined troops, carried all before it. Now all nations have abandoned muzzle-loading small arms for breech-loaders, and the next step is repeating or magazine arms. No doubt we shall see a general rush to follow the lead of Germany, although the previous action of Sweden and Switzerland had been little heeded, since no nation will had been little heeded, since no nation will be willing to become a victim to a more efficient weapon in the hands of its enemy.

A Boston View of the Nail Trade.

from the Boston Herald will be read with interest. We have corrected several errors evidently growing out of the lack of familiarity of the writer with the industry, errors in transmission rather than in the original statement :

"The nail trade is in a very peculiar posi-tion just now. In the first place, nearly two thirds of the New England nail industry is idle, and manufacturers are questioning as to whether it be best to put in a stock of coal and iron, and continue to make nails on which they are to be beaten out of all profits by the Western manufacturer. It is a fact well understood by the New England nail manufacturers that the Knights of Labor have complete control of the nail industry; that they hold a membership of over two-thirds of the employees in the industry. It is also understood that the Amalgamated Iron and Steel Association, a society under the control of the Knights of Labor [this is an erroneous statement-Editor Iron Age] has lately found it necessary to appoint a vice-president east of the Rocky Mountains, with a special view to equalizing the pay of the operatives in the iron industry, and the pay of the New England workman in the nail mills is specially made a feature of grievance. Hence the nail manufacturer feels that trouble is likely to come at any time, and more especially when he has allowed himself to put in a stock of iron and coal, which this organized labor can see as well as the manufacturer himself. Under the circumstances the manufacturer heaitates about stocking up. But the above is not all. Ordinarily this season in New York at a trifle below the New England manufacturer would cost of last season.

of saleable goods on his hands. But the conditions of the nail trade have greatly A recent cable dispatch that the French Government has ordered 60,000 repeating rifles to be distributed among its troops by the end of this month has an interest for this country as well as for all European nations. It was shrewdly said not long ago that after the end of the next great war every Government would want magazing guns; but it now looks as if very few Governments will be willing to wait for the next war. The present act of France is spoken of as a reply to Germany's recent arming of her Alsace-Lorraine regiments with repeatis the steel nail better to the extent that it has taken the trade away from the iron nail, but the steel nail, when once the Besoemer plant is started, can be made very much cheaper than the iron one. Starting with the pigiron in both cases, it would require to convert this pig iron into steel, first, a Bessemer plant, a very costly institution, so to speak. Then to turn 10 tons of iron into steel it would require about 200 pounds of coke burned with a strong blast, which might be driven with any good New England water-power. When the mass is melted a strong blast of air is driven through it for a few minutes, when it is entirely deprived of its carbon, and is ready to become Besseng steal by simply passing. to become Bessemer steel by simply passing in a shovel of spiegel as the molten mass is drawn into molds to cool into ingots. These drawn into molds to cool into ingots. These ingots once formed, the metal is ready to be rolled into nail plates. But to convert 10 tons of pig iron into ingots of iron, or, in other words, to get it ready for the rollers, or puddle it, what does it require? It requires 4 or 5 tons of coal and the labor of three or four puddlers a day and a half. This item of labor alone is worth from \$18 to \$20, and to it must be added the cost of coal, as against the cost of 200 pounds cost of coal, as against the cost of 200 pounds coke mentioned in the Bessemer process. Besides, in the Bessemer process the labor is nearly all done by machinery. It is easy to see how the steel nail is driving out the iron one in the cost of the raw material, or the steel as iron before it is ready for the rollers. But the New England nail manufacturer does not own a Bessemer plant, nor any part of one. It is understood that a single steel plant would answer the purpose of several nail concerns, since over 20 charges not yet come for it.

Meanwhile in Europe the movement in favor of the new system has been going on, the majority of nail manufacturers in New the majority of nail manufacturers in New England to-day as to whether to put in a Bessemer plant or go out of the business. Go out they must if the attempt is made to compete with steel nails and with manufacturers who have facilities for obtaining the steel at the cost of the raw material and converting. Were the conditions of labor favorable the question would at once be answered in favor of the Bessemer plant. But the Knights of Labor are believed at once be answered in favor of the Bessemer plant. But the Knights of Labor are believed to be only watching a favorable opportunity to make the attempt to put the New England nail-mill employee on the same scale of wages with the Pittsburgh workman at the same business. This is a condition which the New England manufacturer finds can never exist. There are all the advantage of the same business. never exist. There are all the advan-tage of iron at a minimum price and at little cost of freight, and formerly of cheap coal, but latterly the wonderful develop-ments of natural gas in the favor of the Pittsburgh manufacturer, whereby the cost of fuel or heat is reduced to cents where dollars of fuelor heat is reduced to cents where dollars were formerly counted and must at present be counted against the New England manufacturer. About the only feature which counts in the favor of the New England manufacturer is a near market to sell in where nails can be landed at a low cost of freight, which cost of freight would be against the Pittsburgh manufacturer. Possibly cheap and good water-power may also be counted in the New England manufacturers' favor. Under such conditions the New England Under such conditions the New England nail-making industry seems to tremble in a balance, and a balance which the Knights of Labor seem to have the power to turn the

wrong way."
It is, of course, an exaggeration to state that there is scarcely a machine making iron nails in the West, that there is no market for the iron nail in that section of the country, and that such is coming to be the case rapidly in the East. We do not know of any new steel plant in contemplation at Philadelphia, and the statement that it takes 200 pounds of coke to turn 10 tons of iron into steel is understating the facts, since it takes more than that to melt the iron alone. Now are the New England the iron alone. Nor are the New England manufacturers so helpless so far as a supply of steel is concerned. The plant of the Reflecting as it does, apparently, the liews of a well-informed person in the New angland nail trade, the following article selling at sufficiently low prices in tidewater markets, at, say, \$28 to \$29. We be-lieve that one of the causes which make New England mills conservative is that their product has always had a high reputation for quality.

> The Southern Exposition to be held at Louisville, Ky., will be opened August 28 and closed October 23. Music Hall has been altered, and is now one of the finest of its size in the country, having a seating capacity of about 7000. The art gallery will be part of the main building this year. Eight hundred and fifty horse-power will be required to run the dynamos for lighting the buildings and grounds. Four batteries com-prising 16 boilers, 42 inches by 24 feet, will furnish the steam, and the Buckeye Engine Company, of Salem, Ohio, will furnish the motive-power to run the miles of shafting. The machinery department in the past sensons has been remarkably successful. At the end of one season, out of 650 cars of machinery received only 100 returned, the other 550 cars having been sold and shipped to other parts. There is no charge for space at the exposition, and only \$5 entrance fee for competition for each contributor, and not each article. Nearly all of the floor space is already taken. Foreign exhibits will occupy considerable room, and among other attrac-tions will be the largest collection of curiosities pertaining to the natural history of America ever brought together.



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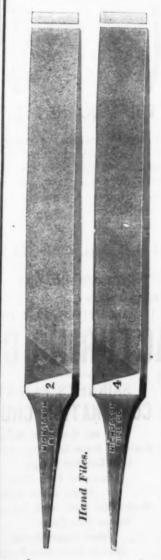
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METALLURGICAL.

Magnesia vs. Dolomite as a Basic Refractory.

M. Zyromski has recently discussed before the Société de l'Industrie Minérale the rela-tive merits of magnesia and dolomite as refractory materials in producing cheaply uniform, mild steel in a basic open-hearth furnace. M. Zyromski begins by investigat-ing the chemical composition of the natural magnesites of the Greek island of Eubea, and of Mitteredorf, in Styria. The analyses were made at l'Horme Steel Works, and by Michallet, Lorette, manufacturer of magnesia re

	Volati	Lime	Макре	Silica	lron a alumin
Eubea magnesite: Mining Co. an- alysis		1.50	47.00	0.50	
Average of l'Horme anal- yses		2.00	45.00	0,60	*****
Eubea calcined magnesite: No. 1 No. 2	trace	2.670 0.830		0.73	0.560
No. 3 No.4,soft,soapy sample	0.044	2,481	86,00 82,46	7.92	2,888 8,540
Mitterdorf mag- nesite: Lorette analy's.		1.68	42.48	0.92	4.300
St. Etienne an- alyses L'Horme anal-		8.50	87.10	0.40	4.000
yses	52.60	0.50	35.00	0.50	11.000
Eubea Mitterdorf		8,40 0.50	86,90 81,28	8,90	8,40 8,40

the Eubea material is richer in magnesia and lower in alumina than that from Mitterdorf Styria. This magnesia is absolutely refractory in the highest heats. It agglomerates very little, much less so than dolomite, and sometimes is troublesome for that reason, because patches of the bottom come up, forming an almost infusible paste on the surface of the metal, retarding the opera-tion and rendering the danger of accidents greater. In such cases it is more prudent to give up the cast rather than to attempt to carry it through to the finish. The Eubea magnesite is calcined in a cupola, and the Styria raw material in a reverberatory furnace, because the proportion of dust becomes so great that, mixing with the coke dust, the loss of it becomes too great. The calcined material is picked over, crushed and then mixed with some magnesia simply calcined at a red heat. It is then pressed into brick form, and is finally calcined at the highest heat attainable. Thus a product is obtained which has no shrinkage, and which does not which has no shrinkage, and which does not disintegrate even if exposed to rain. In one respect magnesia brick possess an advantage over dolomits. It may be brought into contact with silica linings of any kind, so that a silica brick roof may be built on a magnesia hearth without needing any isolating material between the acid and the basic material, thus avoiding one source of commaterial, thus avoiding one source of com-plication.

So far as dolomite is concerned, it may be stated at the outset that those kinds are preferable, other things being equal, which contains the highest percentage of magnesis, because the calcined product deteriorates less rapidly under exposure to air. So far as the other constituents are concerned, the following table will afford some informa-

patent, dated the 29th of June, for a machine for dividing rails or rail ends into longitudinal sections suitable for the manufacture of wire or other analogous purposes, by first nicking them along the desired line of fracture and then breaking them into longitudinal strips by their machine. The latter consists of a longitudinal anvil to receive the rail and a corresponding breaker bar to act upon the rail.

Messrs. Julian Kennedy, of Pittsburgh, and Henry Aiken, of Allegheny, were granted a patent on the 29th of June, on improvements in universal mills for rolling I beams and other structural shapes. Its chief features are the arrangements for shaping the outer flanges by driven side rolls having their axes in the same plane.

Emil Boehmer, of Breslau. Germany, has been granted a patent, dated July 13, 1856, for hydraulic shears for cutting thick iron or steel blooms, consisting of a vertical triplicate steel cylinder. A second patent, of the same date, shows it arranged for shearing plates and sheets, the blade being operated by a horizontal hydraulic cylinder through the intermed ary of levers. A third patent refers to a differential accumulator

Peter Kirk, of Workington, Cumberland, England, has been granted a patent, dated July 13, 1886, for rolls for making tramway rails of a section, however, little used in this

reservoir is being constructed in South Australia. The source of water is chiefly the Beetaloo Springs, near the center of the Wirrabara Forest reserve, and about 10 miles northwest of Gladstone. The rainfall of this district has not been recorded for a sufficient time to afford trustworthy data, but at the Wirrabara Nursery, 10 miles northward, 30.220 inches were recorded in 1883 and 34.290 inches in 1884. Last year, however, there was not much over 16 inches of rain. The catchment area contributing to fill the reservoir will be considerably over 5000 acres, and as the hills are steep on this part of the reserve it is expected that the reserve of the reservoir is seepeded that the reservoir will soon fill and remain filled. The reservoir is about 88 acres in extent, with an average depth of about 60 feet, a width of about 700 feet and a capacity of 700,000,000 gallons. The cost of the works, services included, was originally estimated at \$1,-250,000, but it is now thought that it will not exceed \$1,000,000. A weir in connection with the work is being constructed, and will be 105 feet high, with a width of 85 feet at the base and of 14 feet on the top. The length of the wall will be 560 feet at top. There will be over 60 miles of main pipe laid to Kadina from Beetaloo. The capacity of the reservoir is 700,000,000 gallons. The length is 1¼ miles. The following are further particulars: Width at bottom of dam of the reservoir is 82 feet; radius of curve of dam, 1323 feet; length of dam at top, 560 feet; masonry in dam, if 105 feet high, 33,000 cubic yards; area of land to be reserved for reservoir, including roads, 666 acres 3 rods 2 parches; total langth of served for reservoir, including roads, 666 acres 3 rods 2 perches; total length of mains, 67½ miles.

Strength of Submarine Cables .- A submarine cable, according to the Manufact-urers' Gazette, is by no means of uniform strength, the thickness depending to a large extent on the depth of water. For instance,

Quarry.	Volatile matter.	Lime.	Mag- nosia.	Silica.	Alumina.	Oxide of Iron.	Remarks.
Varigay (Fr.)	44.2	28.3	18.6	4.10	3.00	1.70	Calcines well.
Santenay (Fr.)	46.6	33.6	17.7	0.90	0.70	0.60	Very poorly.
Dion (Fr.)	42.2	31.4	16.4	0.10	1.50	4.00	Well.
Thy-le-Chateau (Belg.)	47.4	33.0	18.5	0.30	0.20	0.70	Poorly.
Chozanow (Aust.)	46.2	29.0	17.3	0.80	0.90	4.10	Well.
Dembrowa (Poland)	45.4	31.0	16.1	2.00	1.30	3.20	
Bemèges (Fr.)	45.0	28.0	17.0	1.80	4	00	

It seems to follow from this table that the calcining is more complete and easy the closer the total of 4 per cent. for alumina and oxide cf iron is approached. Beyond that figure, and particularly if the silica is above 3 or 4 per cent., the products, while well calcined, becomes less refractory. M. Zyromski believes that, other things being equal, the best dolomite for open-hearth furnaces should carry about 3 per cent. of silica. It agglomerates well, hardens rapidly and is still very refractory. Dolomite is considerably cheaper, and there is no danger of the rising of part of the bottom, as noted in the case of magnesis. M. Zyromski states that he has hardly ever lost a heat. He attributes this greater regularity to the use of limestome as an addition, which produces rapidly a fluid cinder with the minimum of silica. He does not think much of delemits hriefs and he concludes his review. tory as against dolomite.

Effect of Gverblowing Steel Upon the Elimination of Phosphorus.

product (D):

A. B (... D. Final one bour Final short. later. product bon. 4.05 0.08 0.05 0.05 0.09 0.04 0.014 pphorus. 0.024 0.089 0.046 0.066 hiur... ganess. 4.40 0.10 0.08 0.08 0.08

carried to an extreme, on an acid bottom the phosphorus is not at all eliminated. The increase, of course, is due, to concentration in a smaller quantity of works. tion in a smaller quantity of metal.

Messrs. Alford Hill, Richard Hill and Cyril M. Bevan, wire manufacturers, of Middlesboro', England, have taken out a miles of the Shenandoah Valley.

duces rapidly a fluid cinder with the minimum of silica. He does not think much of dolomite brick, and he concludes his review with the assertion that, if the furnace is to be built with basic brick, magnesia should be preferred; if a rammed bottom is to be used dolomite is better. He states that when dolomite is used the consumption of basic refractory is about 50 pounds per ton, and finally expresses the view that in this contest magnesia will not carry off the victors as against dolomite. own length in water.

Eilimination of Phosphorus.

A. Tamm, describes in the Jernkontorets Anader a somewhat curious experiment made at the Vestanfoers Bessemer Works. A charge of 1850 kg. of pig iron was blown until it was reduced to only 400 kg. The following analyses show the composition of the pig (A), the composition of the steel when the flame became short (B), its constituents an hour later (C), and the final product (D):

English Guns.—Engineering, of London, in a long editorial called out by the recent disastrous experiences with English guns, asys: "If the subject were not too serious for levity our position with regard to order would furnish a highly-amusing spectacle. Here stand we, posing as the most mechanical nation in the world, the leaders in all modern progress, and, above all, the ground the product (D): age, and yet we are apparently quite in-capable of supplying ourselves with cannon or armor-piercing projectiles. We spend a million a year in artillery, maintain an enormous staff of experts to lay out this sum, appoint numerous committees to counsel the experts, and after all this our guns are in-This proves that, even if overblowing is ferior to those of other nations, and are

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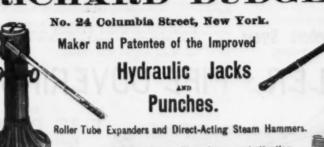


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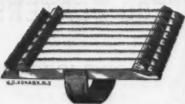
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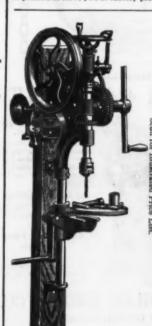
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Fire from Heated Asbestos.

Fire originating from heated asbestos intended as sheathing is noticed by a patrol inspector in Philadelphia. In one of two recent instances the combustion chamber of a regenerative gas lamp was too near certain woodwork, and asbestos was inserted be-tween, but the heat soon penetrated the stratum of asbestos and set fire to the wood. In the other case the sheet iron top of a portable heater was within a few inches of

The well-known fact that the carbon fila ent of a vacuum glow lamp is gradually dissipated by some electric or thermal effect of the vacuum points to the trial of lamps in which the vacuum is discarded and its place supplied by an atmosphere of hydro-gen, nitrogen or other gas which cannot oxidize or burn the filament. According to Engineering, Messrs, Siemens Brothers have lately been making lamps filled with hydrogen, and they find that these lamps do not become sooty on the inner surface of the glass. Next to a filament which will remain incandescent in the open air, an envelope which will remain clean and not of itself destroy the filament is a desideratum.

A New Alloy of Aluminium.

The applications of aluminium are now considerable, and M. Bourbouze, a French physicist, has added to their number by employing an alloy of the metal with tin for the ploying an alloy of the metal with tin for the internal parts of optical instruments, in place of brass. The alloy he employs consists of 10 parts of tin and 100 parts of aluminium. It is white, like aluminium, and has a density of 2.85, which is a little higher than that of pure aluminium. It is therefore comparatively light, which is an advantage for apparatus where lightness is desired. It can be soldered as easily as brass, without special means, and it is even more unalterable than aluminium to reagents. The attention of electrical instrument makers should therefore be called to it, especially should therefore be called to it, especially for apparutus of a portable character,

A Lump of Coal.

Few persons have any idea of the wonderful products from a lump of coal—a lump of coal that is placed in the retort of a gas manufactory. Ordinarily burned, the commanufactory. Ordinarily burned, the com-bustion of a lump of coal results in carbonic acid, smoke, which is simply soot, or rather the visible portion of smoke is soot, and the ash, in which are found silica, alumina, oxide of iron, phosphoric acid, sulphuric acid, potash, sodium, combined sulphur and sometimes traces of chlorine, titanic acid and other substances. In the gas retort a variety of products are obtained. The gas as it is carried through the hydraulic main to the purifying-rooms takes with it tar and ammonia, the latter evolved from the nitrogen. The ammonia has to be washed out with water, in an arrangement by which the ammonia is gathered and saved. Tons and tons of sulphate of ammonia are thus made and become an article of commerce. The sulphur is removed by caustic lime or oxide of iron.
The carbonic acid is also removed by lime, but the carbonic oxide cannot be removed, and with several ethers remain in the gas after all efforts to remove it. These ethers give the gas its smell. By distillation naphgive the gas its smell. By distillation naphtha and asphaltum are obtained. Asphaltum is a dead oil, very useful to preserve wood. From this, too, carbolic acid is obtained, very important in surgical operations as being the most valuable antispeptic known. From naphtha, benzole, cumol, teluol and cymol are obtained. Naphtha, as is well known, is used as a burning fluid. Benzole is a solvent for grease and oils, very useful in cleaning kid gloves and things of that kind. Benzole treated with nitric acid produces nitro benzole. This, singularly enough, is used as a flavoring extract by confectioners and for perfuming soap. When used for this pur-pose it is known in commerce as the essence of myrrhbane, which it is not, although it obtained. This, when first obtained, is a infinitely more importance, continuous. grows older. From aniline are obtained the coal-tar colors, which are so very brilliant.

The different colors known to the trade as aniline colors are of all hues. The one known running of cable cars the Philadelphia Traction Company are introducing a new electrical vertex on their Market street branch. nerated here. An Impalpable Counter.

An ingenious method of indicating the

oscillations of a free pendulum, and which, indeed, is applicable to other delicate movements which require to be unhampered by extraneous forces, has been devised by M. Marcel Deprez, the well-known French electrician. M. d'Abbadie, of the French Academy of Sciences, proposed to utilize a ray of light incident at each oscillation on a selenium cell in circuit with a battery and conclusive manner to every the results. selenium cell in circuit with a battery and an electro-magnetic counter. M. Deprez has, however, chosen a thermo-electric in place of this photophonic arrangement. The pendulum is furnished with a screen provided with a window 30 mm. to 40 mm. long, and 3 mm. to 4 mm. wide. A pencil of luminous rays from a petroleum lamp with a flat wick, and concentrated by means of a cylindrical lens travelation. Street.

25 Washington Street.

lation, is caused to strike upon a thermo-electric pile having all its like junctions echeloned on a length equal to that of the window. At each oscillation an electric current is thus sent through the galvanom-eter, which is very sensitive and aperiodic. This galvanometer works a relay which closes the circuit of an electric counter.

Explosive Ice

The explosive quartz of Branchville, Conn. which owes this peculiar property to minute crevices in its mass being filled with partly liquefied carbon-dioxide, has been matched the joists of first floor; asbestos was placed on the heater, but heat passed through and the joists took fire. Heat was always above 300° F. and confined. No fires were noted from steam pipes sheathed in asbestos. The institution, procedure as a safeguard from the vessel of a "gasogene" or apparatus from steam pipes sheathed in asbestos. The inspector recommends as a safeguard from the vessel of a "gasogene" or apparatus the heating of the non-imflammable fibrous for charging distilled water with carbonicstone an unobstructed air current between the source of the heat and the asbestos covering.

Hydrogen in Glow Lamps.

The well-known fact that the carbon filepressure in crevices of the ice.

Reactions Under the Influence of Pressure.

When a mixture of carbonate of sodium and sulphate of barium is melted there is a complete reaction when the sodium carbonate is employed in sufficient quantities. After cooling the soluble salts can be removed by the aid of water, and the insoluble residue is formed exclusively of carbonate of barium. W. Spring has found a similar reaction, though less complete, from the influence of pressure alone, which is a fact of some consequence in the study of the molecular actions which take place between solid bodies in contact. He has experimented under pressures of about 6000 atmospheres, continuing for intervals varyatmospheres, continuing for intervals varying between a few seconds and 24 days, and also upon the combined influences of pressure and temperature. In the latter case he has found, as might have been anticipated, that heat exercises an influence opposed to that of compression. These experiments have an obvious bearing upon the diffusi-bility of matter in a solid state, as well as upon the explanation of some other natural phenomena which are not yet well under-

The Nation's Great Problem.

Prof. R. H. Thurston, director of Sibley College, Cornell University, in his recent lecture before the graduating class of the Rose Polytechnic Institute, at Terre Haute, Ind., took for his subject the nation's great Ind., took for his subject the nation's great problem, the possibility of progress without revolution. The solution of this problem he finds in education—the careful, moral cultivation of the people at large. There are, it is said, two distinct systems of education—the old, or gymnastic, and the new, or technical; but a deeper interpretation of the intellectual life shows no such distinction. However better adapted the new education may be to our present wants, it has at its foundabe to our present wants, it has at its founda-tion the elements of the old. The technical education, which is new beginning to re-ceive proper recognition in our systems of culture, is simply the supplement to our older, incomplete academic training. In the ideal education the citizen is fitted for the successful pursuit of every desirable object

The education at school and college is no longer regarded as a finality, but simply as a means to an end, and that end is the stu-dent's life work and culture. Some years ago, in tracing the history of the develop-ment of the modern steam engine, Professor ment of the modern steam engine, Professor Thurston divided its growth into three periods—speculation, application in several distinct forms, and finally a period of refinement. In the growth of our educational systems we have reached this third stage, the period of refinement, in which, the elements of the complete system being present, it remains for us to select and arrange them to form a symmetrical whole of maximum efficiency, and adapted as perfectly as possible to the purposes which the experience and wisdom of the world have found essential. But the subject of technical education is so large that it has become necessary to specialize, and we have, acnecessary to specialize, and we have, ac-cordingly, the manual training school, the trade school and the school of engineering, of myrrhbane, which it is not, although it smells and tastes something like essence of myrrhbane or oil of bitter almonds. Nitrobenzole is terribly poisonous, but not more so than some other adulterants used by confectioners. From nitro-benzole aniline is obtained. This, when first obtained, is a influited more importance continuous.

as "turkey red" is exactly similar to the tion Company are introducing a new electrical that used to be made from the madder root. Since the discovery of this aniline it has almost completely broken up the raising of madder in Holland. There thousands of acres were devoted to the raising of madder root to get the turkey-red dye. It can be made much cheaper from the product of a gas factory. There are still many other products of a lump of coal after it is placed in the gas retort which cannot be enumerated here. and through an arrangement of signals any information that is needed to meet the emergency can be instantly forwarded.

> There is some excitement in the Birmingham district, England, over complaints from New Zealand on the quality of English car-riage nuts and bolts, the purchasers assertthat the American goods are much

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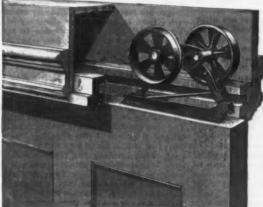
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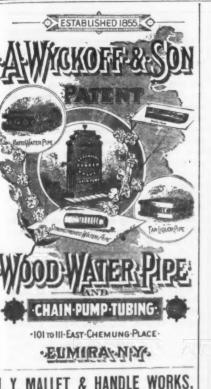
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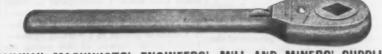
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The Freight-Train Brake Tests.

An important test of competitive freight-train brakes commenced at or near Burling-ton, Iowa, on July 13. A long list of experiton, Iowa, on July 13. A long list of experiments are to be made under the direction of the Master Car-Builders' Association, the first series of which are to be conducted on a track ab ut 8 miles in length, belonging to the Chicago, Burlington and Quincy system, and extending from Middletown through West Burlington to Burlington. Each of the competitive broke companies was required to competing brake companies was required to equip with their brake 50 30-feet or 34-feet box equip with their brake 50 30-feetor 34-feet box cars, of 40,000 pounds capacity, each car to be equipped with brakes on both trucks and plain cast-iron shoes. There are five competitors, and as the brakes are applied to new rolling stock all the companies are presumably subjected to some disadvantages arising from this circumstance at the outset. On account of special imperfections discovered on parts of the cars to which the Rote brakes were attached that company requested and received permission to have an Rote brakes were attached that company requested and received permission to have an a dittional period of 30 days to remedy these defects. The American Brake Company had rolling stock which they were preparing destroyed by fire a short time before the tysts commenced, and they received permission to extend for a short time the period for producing their fully-equipped train, but they expected to have all arrangements completed after a very brief delay.

The ownership of the cars present at the commencement of the tests was as follows:
The Westinghouse brake was applied to

The Westinghouse brake was applied to Chicago, Burlington and Quincy cars; the Eames brake to Indianapolis, Decatur and Springfield cars; the Rote brake to Chicago, Rock Island and Pacific cars, and the Wid-difield & Button brake to Lehigh Valley cars. All these cars are to be returned to the companies who own them, and to be subjected to a protracted endurance test in general service on their respective lines, after the preliminary tests are completed, and after the endurance test, which is to be as continuous and as fully recorded as possi-ble, the cars are to be returned to Burlington for a second series of special tests under ton for a second series of special tests under the direction of the master car-builders' committee in April, 1887. The preliminary tests commenced two weeks ago can scarcely be regarded as conclusive in any respect, as they are only a starting point in what promises to be a very extensive experimental investigation, as all the companies are investigation, as all the companies are laboring at the outset under disadvantages of one kind or another. The rules required that in the preliminary tests two ordinary eight-wheel engines should be employed, one of which was to be equipped with the Westinghouse driver brake and the other with the Eames vacuum brake. A third engire was furnished with the American driver was furnished with the American driver brake. The first test, on July 13, related brake. The first test, on July 13, related to the operations of these engines. It was followed by a test of the effect of handapplied brakes. Subsequently there were tests of some of the freight-train brakes applied to 25 cars, some of which were loaded and some empty. The list of tests to be applied at Burlington in the experimental already commenced and now progressing include the following:

GENERAL TESTS.

1. Fifty-car trains on down grade 54 to 56 feet per mile, running forward, quick stops.
a. All cars loaded, 30 and 20 miles per

b. All cars empty, 40 and 20 miles per

Cars mixed (see below), 40 and 20 miles

per hour. per hour.

Note.—Half the cars to be loaded and half empty, 75 per cent. of the latter to be on the front half of train. During these tests the rapidity with which the train gets away after a stop will be noted, the time being taken from stop to start.

2. Fifty-car trains on level, running forward could stop to the stop with the stop to th

and so on. Tests on the level. Speeds 30 and 20 miles per hour.

3. Twenty-five-car mixed trains with the same train brake on 12 cars next tender. The rear 13 cars to have hand brakes only. Speeds 40 and 20 miles per hour. Tests to be on level.

4. Fifty-car trains. Trains to be composed in equal proportions of different train brakes that will operate tegether. Half of the cars empty and half loaded—about 75 per cent. of the empty cars in front of train.

ples through porous media of inconceivable fineness. When two gases, such as hydrogen and air, are separated by a porous medium they immediately begin to pass into each other, and the lighter gas passes through more quickly than the heavier. He showed a glass tube, the upper end of which was closed by a thin slice of cork, the lower end dipped into a basin of water. The tube was filled with hydrogen, which is about 14½ times lighter than air: consequently it left the tube through the cork more quickly than the air could enter in by the same means, and the result was a partial vacuum in the tube, and a column of water drawn up, ples through porous media of inconceivable fineness. When two gases, such as hydrotube, and a column of water drawn up, proving that the cells of cork are eminently pervious to gases. The pores in the cell walls appear, however, to be too minute to permit the passage of liquids.

Foreign Markets.

FRANCE

Paris, July 15, 1886,—Metale,—Midsummer is usually a duil time, and this year there seems to be no exception to the rule. Metals during the week have been flat, Copper being steady. Tin higher and Lead and Spelter easier. We quote at the close in francs \$\frac{1}{2}\$ 190 kg.; Copper,—Chil Bars, 102,50 & 105; Ingots and Slabs, 107,50; Best Selected, 110,50, and Pure Corocoro Ore, 103,50, Tin.—Banca, 276,25; Billiton, 275; Straits, 270; Australian, 272,25, and English, 267,50. Lead, 33 & 35,50, and Spelter, 36,50 & 37, Iron.—All Iron markets in France, ours included, have remained firm during the week, though perhaps less active on the whole. Here Flooring from sold as high as 14 \(\frac{1}{2} \) 10 francs \(\frac{1}{2} \) 100 kg. An encouraging sign has been the receipt of orders for railroad material from Portugal, with rethey prefer French material to Beighan, although slightly dearer. The general outlook remains encouraging; in the first place there are the large amounts to be spent on public works, and in the second place there is the harmonious action of makers in the North of France, with every probability that the good management which has so far characterized such action will prevent the French Iron trade from falling back into an unsound position. Coat—Has remained quiet and steady.—Moniteur des Intérêts Matériels.

BELGIUM.

BELGIUM.

BRUSSELS, July 15, 1886.—Iron.—A quieter feeling has begun to prevail in the Belgian Iron market; orders, it is true, continue dropping in steadily and sufficient in amount to keep nearly all our rolling mills busy, but by common agreement no maker thinks of raising prices. The fact is that, low as they are, present prices leave the maker still a margin of profit; hence it would be folly to run the risk of spoiling a situation which, if not brilliant, is good enough to bridge over the summer months. This so far as Finished Iron is concerned; as for Pig, it is abundant and cheap, without prospects of a speedy improvement. Should the demand for Forge Pig suddenly increase, Luxembourg can double its output at short notice, and Charleroi is similarly situated. Coal is also very low; hence the rolling-mil owner has the advantage of low-priced raw material. We quote: Luxembourg Forge Pig, 3:80 francs ½ 10x kg; Charleroi, 3:70 @ 4:70; Foundry, Luxembourg, 4; Charleroi, 5:75; Merchant No. 1, 10 francs; Heams, 10; Angles, 15; Sheets, 12:50 @ 20:50 trancs as a range. Coal has been dull and weak; Steam Coal at 5:60 @ 9 francs ½ ton, and Domestic at 10 @ 12.—Moniteur Industriel. @ 9 francs & ton. niteur Industriel.

GERMANY.

HANBURG, July 15, 1886.—Iron.—Works in Rhenish Westphalia have been at rest, taking stock for the past fortnight most of them; hence little has transpired in the way of business. Pig Iron has formed an exception, however, and some large lines have changed hands at a slight decline. There is also an impr ved export demand for Spiegel and some more inquiry for Forge Pig, but Foundry Pig and Lauxembourg are too freely offered and tending downward, while Thomas is tolerably well sustained. As for rolling-mill products, some consumers neglected to secure what they required before July 1, and are now compelled to pay an advance at a time when the stock is reduced. Orders have also been accumulating for Sheets, so that the mills will be busy turning them out during what remains of the month. Wire rods are even duller than before, and production will have to be lessened. Occupation has diminished considerably at the Steel works making railroad material; orders are light and they will have to manage accordingly. There is also a lack of orders for Cars, Locomotives, Boilers and Structural Iron. Meanwhile the Pigtron situation in Upper Silesia is anything but cheerful; although blast furnaces continue to be blown out occasionally, those remaining active have greater capacity than formerly, so that stocks remain larger all the time than they should be. The outlook for rolling mills is on the other hand rather promising. Metals have been quiet, but well sustained.—Borsenhalte.

taken from stop to start.

2. Fifty-car trains on level, running forward, quick stops.

Same as tests on grade, except that trials are on level.

3. A train of 50 loaded cars to be let down a grade of 20 miles per hour at top of grade to be reduced to 15 miles per hour at maintained without material variation all down the grade.

4. Twenty-five-car trains. Twelve cars to be loaded and 13 empty, about 75 per cent. of empties being on the front half of train. Tests to be made on level at 40 and 20 miles per hour.

5. Similar trains to above. Tests to be made ascending grade of 54 to 56 feet per mile, engine in front of train pulling.

Speed about 12 miles per hour.

SPECIAL TESTS.

1. Twenty-five-car trains. Half the contributes to the process of the first of the loaded to 12 miles per hour.

CHILI.

Viennal July 11, 1808. Heres has been dounded and maintained of train grade of 2 miles per hour at top of grade to be reduced to 15 miles per hour at the better inqury is springing up for Structural from and Thick Sheets. Thin Sheets being neglected. As there is in course of formation, however, a syndicate of rolling-mill owners turning out Sheets of all kinds, it is believed greater stability will be established in the prices of all of them without exception. The sugar campaign will also c eate a good demand for sheet iron. Meanwhile machine shops are the reverse of busy, and this dullness contributes to keep fron prices low. For some time past the export of Scythes and this dullness contributes to keep fron prices of them without exception. The sugar campaign will soc eate a good demand for sheet iron. Meanwhile machine shops are the reverse of busy, and this dullness ontributes to keep fron prices do. Scientification of very much, a phenomenon not yet satisfactorily explained. Something similar has happened with Enameled Hollow-Ware from Bohemia. The price of Fig Iron has been reduced still further: we quite the range 40 (6. Bohemian; Sheets, 140 (6. Bohemian; Sheets, 140 (6. Bohemian; Sheets, 140 (6. Bohemian; Sh

Speed about 12 miles per hour.

SPECIAL TESTS.

I. Twenty-five-car trains. Half the cars to be loaded and half empty, about 75 per cent. of the empty cars being on the front half of the train. Tests on the level. Trains to be broken in two near the center. Speeds 40 and 20 miles per hour. After the train is broken in two any assistance necessary will be rendered only by a brakeman, who shall be riding at the rear of the train when the breakaway occurs. (See Rule No. 4.)

Note.—In all the above tests all the cars in a train are fitted with the same automatic brake.

2. Similar trains as above as regards number and loads of cars. One-half of the cars to be equipped with the same automatic brake, and the other half with hand brakes only. Three cars with hand brakes only. Three cars with hand brakes only next tender, then three with train brake, and so on. Tests on the level. Speeds 30 and 20 miles per hour.

3. Twenty-five-car mixed trains with the Ray Persons. (See Rule No. 4.)

Rogerspass. July 31, 1826.—Copper—Has been sparingly offered, and, as at the same time cable quotations fluctuations f HOLLAND.

ROTTERDAM. July 11. 1985.—¶'in—Has relapsed into dullness. We quote Banca, apot, 62 guildera y 50 kg.; Billiton, August-September, 61.50; do. October, 61.75.—Koch & Vluethoom.

on level.

4. Fifty-car trains. Trains to be composed in equal proportions of different train brakes that will operate tegether. Half of the cars empty and half loaded—about 75 per cent. of the empty cars in front of train.

Note.—No hand brakes to be used on tests 2, 3 and 4.

In illustration of the diffusion of gases, Mr.

W. Anderson, the well-known English investigator, recently gave some good exam.

New York, Thursday, July 29, 1886.

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Eastern Manufacturers and the Anthracite Coal Companies.

The anthracite coal companies last week made one of those periodical moves which are fast losing their power as stimulants to the trade. The entire business seems to be fast drifting into a condition deplorable alike to producers, consumers and dealers. The management of the coal companies is becoming more and more notorious for chicanery and for puzzling inconsistency. There are a number of causes for this state of affairs, some of which are far from creditable to the magnates of the coal trade. There is a growing conviction that the exigencies in the manipulations of a few stocks in Wall street are given more consideration trade, be it consumers, middlemen or pro-It is intimated that the prospect of personal gains of cliques near headquarters have more to do in shaping policy than the desire to direct great interests so that shareholders receive the largest benefit consistent with a due regard for the future of the business, or for the needs of large industrial interests to some extent dependent upon fairly cheap fuel. Aside from such motives the principal aims of the companies appear to have been collectively to hoodwink the public in general and buyers in particular, and individually to steal a march on rivals. Posing before the investing public and before consumers as an ironclad combination, the coal companies have been diligently engaged for years in breaking the letter and the spirit of agreements entered into. For a long time they were supposed to be carrying out a policy of restriction of output by decreeing at times stoppages of parts of a week or of entire weeks. This plan became impracticable. It never did reduce the output to the extent that the ratio between idle and active periods would tend to indicate, merely because everything was gotten ready during times of stoppage to steam was admitted after the fires had atrush out exceptional quantities in the days tained different degrees of headway. The immediately following them. Intent each structures also, we believe, were made in procuring a greater and greater share of the business, colliery after colliery was

object of which was apparently to gull a virtue was maintained by doing the cutting through firms bound to the leading men through favoritism or kinship. At last the

adopted, that of allotting among the differthe panacea for all ills, and on the strength certain stocks, while some buyers were cajoled into covering requirements for long combination was supposed to rest upon an 'understanding among gentlemen," and yet the first six months of the present year have witnessed an excess of shipment above allotment in the case of at least two companies. and quite a decline in prices. As usual matters were allowed to drift along until nothing short of violent measures could prevent open rupture. Now the coal companies profess to have one of their sudden spells of virtue. All transgressions in the past have been pardoned, the usual assurances have been exchanged, and the advance has been decreed which is always the feature of these compacts. This time it is modestly worded in a different manner, being a restoration to figures previous to the latest cut. Then, too, a real advance is allowed to loom up, but judging by the past this will probably mean that "at a future date we expect to get the price we are now nominally asking, being in the meantime engaged in filling old contracts."
The elasticity of "old contracts" has always been a special feature of the anthracite coal

The happenings of the past six months have demonstrated that the allotment plan is no better than the other methods of restriction which have failed in the past. Its strongest claim to acceptance was that it made it possible to put coal on the market more cheaply by closing down those collieries which were expensive to run, and work full time those which were most favorably circumstanced. It has been defeated by the eagerness of some of the companies pressure on some of the others. Some have crowded the market with more coal than they had a right to ship, others have depressed two elements powerful factors in the trade, and with the intense rivalry and distrust among the managers, buyers will do best to placed any faith whatever in the professions of the so-called combination, and there are features in the present situation which warrant the belief that a continuance of this policy is the wisest so long as consumption remains as moderate as it has been thus far.

The greater part of the anthracite mined

is used for domestic purposes, and that, of course, is dependent principally upon the severity of winter, the demand being massed in a few months. A smaller proposition is required for manufacturing purposes and for the iron trade. It must compete then with bituminous coals directly, a fact which to some extent is a safeguard to the manufacturers of New England, New York, New Jersey and Eastern Pennsylvania. But it must not be forgotten that anthracite must also compete indirectly with the cheap fuels of many other sections of the country, or, in other words, if the coal companies do not

As commonly interpreted, the require keep their prices low their customers will ments of the resolution are very simple, lose trade. In iron manufacture the anthracite blast furnaces are threatened by the cheaper irons of their Southern rivals, while the United States. This might relieve the the rolling mills may be forced to contend Treasury, but would it satisfy the creditor in determining the action of managers of with the cheap natural gas of Western to receive 75 cents on a dollar? The surcoal companies than the necessities of the Pennsylvania. Cheap fuel has therefore plus of \$75,000,000 referred to by Mr. Mormore than ever become an absolute necessity to the manufacturing industries of the East as against domestic and foreign rivals, and implied by the scope of the resolution. The it is the duty of those in charge of these enterprises to give close attention to the coal question. The majority have probably long since accepted the views we have put forward and have acted upon them. But we have reason to believe that there are some who still cling to the traditions which the coal companies are trying so hard to keep alive by a show of concerted action. Unless momentous changes take place, the near future will be merely a repetition of the

> A short time since we saw in a German technical paper an account of some experiments which had been made with steam jets for extinguishing fires. As we remember the results and conclusions arrived at, it seems that steam for this purpose has in Germany been of limited application, and the outcome of the trials, we need therefore remark, utterly failed to satisfy expectations. Experimental wooden structures were erected and fired on the inside, and reasonably tight, so as to prevent excessive blowing through of the steam, but in every

shipping mines could turn out more coal forth with renewed vigor when the supply than the market would carry. Price circulars were issued month after month, the only results, which to a certain extent are inconclusive, may be accepted in some quarters few into the belief that they represented as true measures of the value of steam jets the market. In some cases a show of for fire extinguishing, and it is therefore well to point out that further trials under various conditions of many kinds would undoubtedly have presented the method in a dangers growing out of this system became more favorable light. As a matter of fact, so threatening that another plan was live steam has been found one of the best agents we possess for extinguishing fires in ent coal-carrying roads the quantity of small inclosed compartments, and its merits coal which it was supposed the market in this direction have been generally recogwould take. This, it was decided, would be nized in this country. The size of the room operated upon, however, is an important of it investors were invited to take hold of factor in the question, and it is in this respect that the German experimenters may, and very probably have, overrated the effiperiods with the assurance often given that ciency of the steam jet. Nevertheless, it the combination would prevent a decline already has an established reputation for and if possible engineer an advance. The reliable work, and will no doubt retain the good opinion of mill owners and others specially interested in fire protection.

The Silver Folly.

In spite of the protests of Secretary Manning that the discretion of the head of the Treasury Department to regulate the surplus should not be abridged or interfered with, the House of Representatives has adopted a resolution requiring the Secretary of the Treasury, whenever the surplus or balance in the Treasury, including the amount held for redemption of United States notes, shall exceed \$100,000,000, to apply the excess, in sums of not less than \$10,000,000 per month, to the payment of the interest-bearing indebtedness of the United States, payable at the option of the Government. The proposition was under discussion for two days or for parts of two sessions. Mr. Morrison, who introduced the resolution, explained his position by stating that he found that \$525,664,054, or more than one-third of the money in the country, was in the Treasury. Of this \$182,000,000 was there for redemption purposes. He found more than \$200,000,000 held for current uses, including the amount held for the redemption of legal-tender notes. His purpose in pressing the resolution was to reduce the surplus by monthly calls and payments as often as there is more than \$110,000,000 in the Treasury above all the balances and all the liabilities, and also the unavailable fractional silver coin. This he to carry coal to market, and by the financial argued would "make money cheaper, increase the means of exchange, and help in the transaction of business." It would save \$3,000,000 of annual interest and annual the market with forced sales to raise funds to taxes, and do away with the temptation in keep bankrupt concerns afloat. With these Congress to vote large appropriations because there is "too much money in the

Mr. Hewitt, in opposition to the resolution play a waiting game. The past has shown denied that the money to be released from that those have done best who have not the Treasury would go immediately into the channels of trade. On the contrary, it would be paid to the bondholder, who would simply pocket the proceeds in a market already abounding with capital. In conclusion he summed up his objections to the resolution: Four months after its passage the country would be brought back to the condition in which it had been on the 4th of March, 1885, and gold would be withdrawn from circulation. The moment that occurred millions of men would lose their daily employment. Then a demand would come for greenbacks, and the long struggle for a sound currency would end in fiat money. Of course when the country had passed through the valley of death which once it had traveled with tears and lamentations, made wiser by suffering, taught by bitter experience, it would slowly retrace its steps

> namely, to use the depreciated silver dollar in payment of the interest-bearing debt of rison being in standard silver dollars, the tender of a depreciated dollar is evidently country at large would doubtless like to know the real animus of the reckless measures of financial legislation ever and anon sprung upon Congress, seemingly with the deliberate intention of dissipating, if not actually wasting, the national resources. It will be found upon examination that in one way or another they unerringly point to a silver cataclysm, with its accompaniments of repudiation, national dishonor, upheaval of trade and industry-in short, a financial crisis which would be felt around the globe. Is it possible that any considerable number of men high in official position are prepared to welcome such consequences?

We would not have it understood that repudiation in any shape is a possible consequence of the proposed Treasury disbursement, only so far as this measure points to eventual exhaustion of the gold basis. Any draft on the Treasury which a bondholder may receive is good for its face so long as gold can be obtained at par on a bank check. Just before the passage of the Morrison resolution by the House, Mr. McKinley, of Ohio, sent to Acting Secretary Fairchild the following dispatch:

The Honorable C. S. Fairchild, Acting Se

Treasury have left for working balance besides fractional silver coin? An immediate answer will

The Secretary wrote in answer precisely what he believed, as follows:

TREASURY DEPARTMENT, July 14. The Honorable William McKinley, Jr., House of Representatives: In reply to your telegram of this date asking what the Treasury would have left for working balance besides the fractional silver coin if the balance of \$75,000,000, as shown by the Treasurer's report of June 30 last, should be used in paying bonds, I beg to state that nothng would be left but trust funds, which it would be dishonorable and dishonest to use for that pur C. S. FAIRCHILD, Acting Secretary.

The business interests of the country, distrustful of the Senate, are relying chiefly upon the President to veto the Morrison resolution.

The Electrical Subway.

The practicability of laying electrical wires underground having been demons trated not only in some of the chief cities in Europe, but experimentally and otherwise at various points in the United States, the Legislature of the State of New York directed that the network of overhead wires in New York City should come down, thus relieving the streets of a serious impediment and in other respects affording a needed relief. Commissioners were appointed to exe cute the work, but were at once embarrassed by the numerous plans presented by inventors and would-be contractors, each claiming to control patents and methods indispensable to success and worth a great deal of money. It was not until the recent appointment of Mr. Roswell P. Flower, successor to the late Mr. Loew, that decisive action was taken with reference to rival claims. The announcement is now made that on the 22d inst, the Consolidated Electrical Subway Company delivered its contract and bond to the commission, pledging itself to the faithful performance of the task of laving under ground conduits according to the specfications adopted by the commission. The indemnity bond required by the Sub way Commissioners was for the sum of \$500,000, with five sureties. In perfecting the papers exchanged in this important contract, which concerns all who are in any way connected either as consumers or manufacturers in the use of the electric lights or electric wires of any description, as well as the telephone, the signatures were duly attached-Mr. Theodore Moss for the Subway Commission and Henry Fitzhugh, president, and W. L. Sefton, secretary, for the construction company. All that is guaranteed to the company is the right to build subways in the City of New York according to the plans and specifications furnished by the commission, which has the power to change the plans and specifications at any time. Every point connected with the construction of this subway is placed absolutely in the hands of the commission. By the terms of the contract the management and rental of the completed subways are placed in the hands of the company, subject at all times to revisions and reversal by the commission, but the commission must not interfere except to carry out the intent of the contract, the intent of the laws of the State or the intent of the ordinances of the city. The rentals of the subway to the various electrical companies using it must be fixed at a fair rate, and there must be no partiality. When any dispute about the rental shall arise the matter shall be finally settled by the commission. The subways are to be vested in the company only while it carries out the terms of the contract.

It does not follow from all that has been done thus far toward solving the pole nuisance that every impediment to their removal is fully overcome. Already there is a menace of litigation from disappointed constructors whose applications for a con-tract were ignored. Nor is it clear that the Union Telegraph Company, with its large resources and litigious propensities, will at disposition of its wires. But it is a relief to near to a satisfactory solution.

novelty in the English machinery line. It tion, except perhaps on account of the crudity of its design and its general air of inefficiency. Now, however, the inventor makes for it the startling claim of a return prominence is suddenly given to a device which certainly seems to have very little to favorably commend it. Simplicity, in fact, seems to be the only good feature about it. but this alone cannot outweigh other considerations in the matter of economy Briefly described, the motor consists of two horizontal shafts placed one above the other and furnished each with a pair of wheels, over which pass a pair of chains. Between these at certain intervals are placed floats which pass down a rectangular inclosing casing of any desired size under the pressure of water upon them, and thus perform the offices of a series of pistons in a working cylinder. Arrived at the bottom of this casing the floats pass around the lower pair of pulleys, permitting the escape of the water, and EuropeandAmerica, it appears to have a betascend on the other and open side to perform ter basis than what it had four years ago. the same work over and over again. The and therefore inspires more confidence. opened, thus enormously increasing the instance it was found the fire was held in check only and not extinguished, and burst should be used to pay bonds, what would the is based on the proposition that water has

no force but its weight, and the inventor argues that the machine which utilizes that weight in the most economical manner must be the best. For several reasons, however, it would be difficult to attempt any comparison of the merits of the device with those of the older and well-established forms of water motor, there being, among other things, and as is not at all uncommon in similar cases, a characteristic absence of reliable figures. A test, we understand, has been made, but unfortunately the results are not made public. For friction and leakage of the water, though the latter is claimed to have no effect, and for friction of the chains, floats, &c., dependence must therefore be placed entirely on the inventor, a circumstance by no means calculated to inspire faith when we read of an efficiency of 93 per cent.

The Law and the Boycott.

It is a curious fact that, among all those who have suffered from blacklisting in the ournals devoted to promoting boycotts, an English subject, Mr. T. R. Wyles, residing and doing business in Baltimore, is the first to seek the protection which the law offers, but does not afford unless invoked. In other cases the complaint has been based upon overt acts clearly criminal in their nature. In the Baltimore case the offense onsisted simply in announcing the name of the complainant as one with whom workingmen should do no business. As a customer of a boycotted firm, Mr. Wyles was blacklisted by the Labor Herald. Not liking this sort of thing, Mr. Wyles made application to a United States court for an injunction, which was promptly granted. Encouraged by this very natural and com-mendable procedure other injunctions have been sought and obtained, and the Labor Herald will probably find it inconvenient to maintain a black-list any longer, although the candidates for that honor are probably more numerous now than they were before the litigation began. Gradually we are getting the law of conspiracy pretty well defined. We do not move quite as quickly in such matters as some other nations might, but we are reasonably sure-footed and seldom take a step backward.

The history of the Baltimore case is instructive. The language of the injunction granted by Judge Bond on the petition of Mr. Wyles not only recognizes in the clearest terms the criminality of the conspiracy to break down a lawful business, but it goes much further than the Connecticut judge went in his charge to the jury, upon which boycotters were convicted at New Haven. Judge Sanford held that trades unions had a right to agree among themselves to discontinue buying the goods of another, and also to request their friends and others to do likewise. But Judge Bond expressly prohibits any effort by advice or request to influence other persons against the business assailed. Of course it is impossible to enforce such an injunction literally, but it will undoubtedly have the effect of stopping the efforts now made with so much publicity to keep alive boycotts which would otherwise die out and be forgotten. Whispered conspiracies and secret boycotts are not likely to be felt by those against whom they are directed.

The Advance in India-Rubber.

The recent improvement in an article of such universal use in manufacturing as india-rubber has been the subject of a good deal of discussion of late in mercantile circles. The export from Para, in Brazil, usually ranges between 7500 and 10,000 tons, and of this we received during the fiscal year 1885 14,395.413 pounds, or about 6400 tons. In other words, the United States consume in normal years about 65 per cent. of the entire Para export. This year the consumption of Para rubber among us has been unusually large, for duronce submit to control and supervision in the ing the first six months of the year it amounted to 10,000,000 pounds, against 7,200,000 pounds during the corresponding period of 1885. While consumption has increased, the stock of Para rubber in Eu-A 93 per cent. water motor is the latest rope and America has been reduced to 1000 tons, and under the impulse of the combined was first shown last year at the International demand at Para the price there has steadily Inventions Exhibition, at London, but at risen. In January and February the price that time seemed to attract very little atten- of prime Para here ranged between 61 and 64 cents; during the spring it gradually advanced to 75 cents, and subsequently, in June and July, rose to 82 cents.

The general import of india-rubber into of 93 per cent. of the available work, and the United States was during the calendar year:

Pounos. 25,482,850 817,128 Pounds. 28,672,568 596,821 Net import 25,115,227 23,076,945 Import During the First Four Months. 10,883,611 73,065 Net import..... 10,810,556 8,901,856

It will be seen that the import of all sorts has so far this year shown a greater excess even over the previous year than was the case in all 1885; yet all other kinds of rubber have advanced in price proportionately as much as Para. Although the movement this year is again partly speculative between

rial increase anywhere, while consumption, on the contrary, may, from some cause or another, be susceptible of a notable increase, it is evident that there is room enough for a further advance till the equilibrium between the supply and demand is restored, as it has been during the past three calendar years.

The Philadelphia mills have conceded the demands of their men, who went out on a strike about four weeks since, by signing an agreement till June 30, 1887, in which a 2-cent card is accepted as the minimum of the scale, the price of puddling to be \$3.85 per ton and 15 cents extra for the helpers, making it \$4. For every tenth of a cent advance up to a 2.5-cent card rate the price of puddling will be advanced to cents. On a 2.5 cent rate the price is therefore \$4.35 Then every two-tenths of an advance in the card rate bring an increase of 25 cents in the price until 3 and 3.1 cents is reached, the price being then \$5.10. Up to a 4.20 and 4.30 cent rate an advance of two-tenths brings up the price of puddling 30 cents, and above that a more rapid rate is adopted. We tabulate the figures as below:

Card rate.		Card rate.	Price fo
Cents.	puddling.	Cents.	puddling
2.0	\$3.85	8.4 and 8.5.	\$5,70
2.1	8.95	8.6 and 3.7.	6.00
2.2	4.05	8.8 and 3.9.	6.30
2.3		4.0 and 4.1.	6.60
2.4		4.2 and 4.8.	6.90
2.5		4.4 and 4.5.	
2.6 and 2.7		4.6 and 4.7 .	7 60
2.8 and 2.9		4.8 and 4.9.	
3.0 and 3.1		5.0 and 5.1.	
3.2 and 3.3			

In addition to this the employing firm pays the helpers 15 cents a ton. One-third of the above rates go to the helper. This, it will be observed, is a material advance, especially at a time when the actual rolling price is about 1.75 cents. With foreign stee billets selling as low as they do, the Philadelphia puddlers are giving the substitution of steel for iron a vigorous impetus.

WASHINGTON NEWS.

(From Our Regular Correspondent.)

WASHINGTON, D. C., July 27, 1886. The two Houses of Congress in these last moments of the session are making desperate efforts to do something which will redeem them in a measure from the charge of hav-ing expended 240 days in useless debate, and without offering to the country a single act of necessary concurrent general legislation. The only prospects at this juncture are that the appropriation for additional ships will go through. But even this threatens to ome out in such a bungling manner that come out in such a bungling manner that there is danger that while the money will be available for the building of the hulls it will not be for the purchase of armor and arma-ment. The attention of the Senate Committee has been called to this ambiquity in the bill, which will doubtless lead to a remedy of the defect. There is hardly a doubt but that this bill will get through. There is not much chance, however, for interstate

THE SENATE AND BIG GUNS.

The responsibility for the imbecility of The responsibility for the imbecility of Congress belongs to the House. But for the Senate the parsimonious policy of hypocritical retrenchment to be supplied by deficiency bills would seriously cripple the Government. The House Fortification Appropriation bill is a fair sample. The House proposition was to appropriate \$500,000 in bulk for seacoast defenses. The Senate offers a substitute for the purchase, manufacture and erection of the necessary plant facture and erection of the necessary plant for finishing and assembling heavy ordnance at the Frankford Arsenal, Philadelphia, the completion of the two 10 inch breech-loading steel guns, &c., \$400,000. The Senate also appropriates \$60,000 for 10 12 inch muzzle-loading cast-iron mortage of all with appropriates \$60,000 for 10 12 inch muzzle-loading cast-iron mortars, or six with steel bands, to be contracted for with the South Boston Iron Works. The Senate committee also adds a new section appropriating \$6,000,000, to the following effect: "That the Secretary of War and the Secretary of the Navy be authorized to make contracts with responsible steel manufacturers, after suitable advertisements, to continue not less than 30 days in manufacturers, after suitable advertise-ments, to continue not less than 30 days in newspapers most likely to reach the manu-of not less than 1 square inch to 2 square facturers addressed, for the supply of rough-bored, rough-twined and tempered steel in only apply to the common lever safetyforms suitable for heavy ordnance adapted to modern warfare for army and navy purposes, in quantity not to exceed 10,000 gross tons, in quality and dimensions conforming to specifications, subject to inspections and tests at each stage of manufacture, and including all the parts of each caliber speci-fied; provided, that no money shall be expended except for steel delivered; that each bidder shall contract to erect in the United States a suitable plant, including the best modern appliances, capable of making all the steel required and of finishing in accordance with the contract, and agree in the case of an ordnance contract to deliver yearly a specified quantity of each caliber; the time of delivery of smaller calibers to commence at the expiration of not more than 18 months, and the largest calibers at the expiration of not more than three years from the date of execution of the contract; and all the forgings shall be of American product and manufactured in the United States, and one-half of the material pur-chased under this provision shall be for the use of the War Department and one half for the use of the Navy Department in the armament of ships heretofore or hereafter authorized by Congress, and for the purpose of the foregoing provision the sum of \$6,000, oco is hereby appropriated, to be available for six years from the date of the execution of the contract."

A CHANCE FOR THE STEEL-MAKERS.

It is understood that, should this amend-

The forgings of the 8 and 10 inch guns have all thus far been made abroad. The adoption of the Senate amendments to the Fortification bill will open a new era in ordnance building in the United States. It will not only develop the skill of our own ordnance manufacturers and engineers, but will in-crease the demand for high grades of steel and better qualities of iron. The aptitude of our people will soon create a foreign deof our people will soon create a foreign de-mand. A recent inquiry shows that the Armstrong ordnance and material of Eng-land are a failure, which our people could profit by through a sagacious policy on the part of our own Government. With a liberal appropriation for additional ships and sagonast defenses, industry, would be and seacoast defenses, industry would be stimulated and Congress might be relieved of the charge of total imbecility.

CONVICT LABOR.

The Senate on Monday, by unanimous consent, took up and passed the House resolution authorizing and directing the Commissioner of Labor, under the direction of the Secretary of the Interior, to make a full interior. investigation as to the kind and amount of work performed in the penal institutions of the several States and Territories of the United States and the District of Columbia, as to the methods under which convicts are or may be employed, and as to all the facts pertaining to convict labor and the influence of the same upon the industries of the country, and embody the results of such investigation in his second annual report to the Secretary of the Interior, provided that the investigation authorized can be carried out

under the appropriations made for the expenses of the Bureau of Labor.

The Acting Secretary of the Treasury has rendered the following decisions upon the construction to be given to acts of Congress relating to the metal schedules of the tariff

STEEL IN SHEETS.

"In case steel in sheets or plates is 'galanized or coated with zinc or spelter or other metals, or any alloy of those metals,' it pays, in addition to the rates prescribed in Paragraph 177, a duty of 34 cent per pound under Paragraph 151; that is to say, steel in sheets valued at over 4 cents and not above 7 cents per pound which has been galvanized or coated as aforesaid would pay a duty of 23/4 cents per pound, and besides be subject to the proviso of Paragraph 177."

CLASSIFICATION OF COPPERED WIRE. After an inspection of the sample and a care ful consideration of the reports received in this case, the department is of the opinion this case, the department is of the opinion that the wire in question is properly dutiable under the provisions of T. I., new, 182. The wire is not the "galvanized" wire provided for, but it is coppered wire. Coppered wire was specially provided for in the old tariff; also that "all descriptions of the old tariff; also that "all descriptions of iron wire, and wire of which iron is the component part, should pay the same duty as " coppered wire." These two provisions have been consolidated in the general terms "iron and steel wire." intended to cover all wire except "galvanized" wire, including coppered wire. Further, the second proviso states that "no article made from iron or steel wire, or of which iron or steel wire is a component part article made from iron or steel wire, or of which iron or steel wire is a component part of chief value, shall pay a less rate of duty than the iron or steel wire from which it is made, either wholly or in part." It follows, therefore, that the wire in question cannot be assessed under T. I., new, 216, inasmuch as the general appraiser at Baltimore reports that the rate provided in T. I. new, 126 for that the rate provided in T. I., new, 182, for iron or steel wire is higher than the rate provided in T. I., new, 217, "for manufactures in part of metal," &c. The entry was amended accordingly.

GILT AND PLATED NAILS.

In an appeal from an assessment of duty at 45 per cent. on certain gilt and plated nails and claim for 35 per cent. the Acting Secretary decides that: "The appraiser reports that the articles are nails with brass heads, which latter are coated, respectively heads, which latter are coated, respectively, with an exceedingly superficial deposit of silver and gold, upon which a lacquer has been applied, and that, in his opinion, this coating does not make the nails 'plated and gilt articles' within the meaning of the law. The department concurs in this opinion so far as the silver headed nails are law. The department concurs in this opinion so far as the silver-headed nails are concerned, as they are evidently merely washed with silver, and not plated."

SAFETY-VALVES ON STEAM VESSELS.

The rules governing the use of safety valve' and to spring-loaded valves which are not constructed so as to give an in-creased lift by the operation of steam."

LINEN POCKETS FROM THREADS OF LINEN AND METAL.

On an appeal from an assessment of duty On an appeal from an assessment of duty at 45 per cent. on so-called linen pockets the department rules: "From an inspection of the sample submitted it appears that the pockets in question are made of a material composed of linen and metal threads woven together, and you report that duty was levied thereon at the rate of 45 per cont. ad valorem. The assessment of duty is affirmed." Among the latest synopses of decisions of importance in customs cases are the follow-ing: "The cost of royalty on an imported article should be included in the dutiable value thereof when it appears that such royalty was actually paid to the patentee, that it entered into and formed a part of the cost of the article to the purchaser. Pieces of sawed wood of different shapes and dimensions, provided with holes, planed, &c., which can be fitted together so as to form a complete reel for barbed wire, are dutiable as manufactures of wood, under the provision therefor in T. I., new, 233, and not as wood, unmanufactured. Payments for refunds of excessive duties exacted on importations cannot be made to attorneys unless the entries have been made by them consignees or as agents in the name of the owners when the owners are absent or sick : in the latter case checks for such payment become a law, several prominent steel ments should designate the attorneys as

vessel, and which is part of the ship's neces sary equipment, is not an importation, and is not liable to duty."

NEW PUBLICATIONS.

THE TECHNO-CHEMICAL RECEIPT BOOK. Edited from the German, with additions by William T. Brannt and William H. Wahl. Size 5 x 7½ inches, 495 pages. Published by Henry Carey, Baird & Co. Price, \$2.

It is almost needless to say that this book contains a vast amount of information, practical, in condensed form and readily acessible. It is essentially what it claims to be—a receipt book—and all theoretical reasoning and historical detail have been omitted. The collection is one of approved receipts and processes of practical application in the industries and for general purposes, and there can be little doubt that it will prove of the utmost value and con-venience. Every one who has had occasion to search for information of the kind which the book contains knows the laborious character of the work of looking up formulæ and the directions for carrying out certain operations, and the saving of time and trouble which could be effected by having these particulars at hand in a well-arranged form. The assurance is, moreover, given that the receipts are of the best. The best and latest authorities have been re-sorted to, and innumerable volumes and journals have been consulted in the transla-tion and compilation, and wherever different processes of apparently equal value for attaining the same end have been found more than one has been introduced. The material has been principally derived from German technical literature, which is spe-cially rich in receipts and processes on which reliance can be placed, and most of them, we understand, were practically tested by competent men before they were given to the public. The index, which in a work of this kind is of great importance, has to all appearances been made the subject of careful study, and covers over 30 pages. This, with a long table of contents, will make it an easy matter to refer to any subject or special receipt.

The Second Geological Survey of Penn-The Second Geological Survey of Pennsylvania have made a commendable departure in issuing advance sheets of their publications in the form of pamphlets containing the different reports. Formerly these were sent out in bound volumes. We are not sent out in bound volumes. We are not sure whether the Survey intend to offer these pamphlets for sale as such, a course which many would be grateful for. We re-view below those of the reports which are most likely to be of interest to are readers.

Second Report of Progress in the Anthracity Coal Regions. Part II. By Charles A. Ash-burner, Geologist in Charge.

In 1883 Mr. Ashburner published his first In 1883 Mr. Asburner published his first report of the anthracite survey, outlising the plan to be followed in this important work. In his second report, of which advance copies have just been issued, he states that the demand on the part of those actively engaged in the working of the anthracite collisions was rether for the maps and second collieries was rather for the maps and sec-tions than for the text of the reports, and accordingly his efforts and those of his reduced corps of assistants have been directed toward furnishing surface and underground field work, the maps being issued as rapidly as possible. Since the first report, which was descriptive of the detailed maps of the Parther Creek being the actions and of the Panther Creek basin, the eastern end of the Pottsville or Southern coal field, between Mauch Chunk, on the Lehigh, and Tama-qua, on the Schuylkill River, three large qua, on the Schuyikii River, three large sections of the anthracite regions have been mapped. They embrace in the Northern Field six sheets, covering Nanticoke, Warrior Run, Plymouth, Ashley, Kingston and Wilkesbarre; in the Eastern Middle Field Drifton and Hazleton, and in the Western Middle Field Delano, Shenandoah, Girard-rille and Ashlend. These have here comville and Ashland. These have been com-pleted. Partial surveys have been made in the vicinity of Shickshinny, and Pittston, between Scranton and Carbondale, in the Northern Field, and between Ashland and in the Western Middle Field. The report contains a chapter on the classi fication and composition of anthracite, the greater part of which has been anticipated in papers read before the American Institute of Mining Engineers. Succeeding chapters give a general description of the Southern, Western Middle, Eastern Middle and North-ern coal fields.

PRELIMINARY REPORT ON OIL AND GAS. By John F. Caril.

FOR OIL IN JACKSON AND ABBOT TOWN, Potter County, By Chas. A. Ashburner SHIPS, Poster County. Some General Considerations of the Pressure, QUANTITY, COMPOSITION AND FUEL VALUE OF ROCE GAS. By J. P. Lesley.

These three reports are printed in on small volume of about 110 pages. Mr. Caril's will be read with particular interest, since the author is undoubtedly the best-informed geologist on the subject of oil, and is devotng much attention to gas. His preliminary report covers the happenings of the las report covers the happenings of the last three years in the oil territory, years crowded with events which he summarizes as follows: The history of three years records the outlining and the steady decaof the Great Bradford and Allegheny cil fields; the renewal of extensive opera-tions in the white sands of the Venaugo-Butler group; the rise and fall of Cooper, Butler group: the rise and fall of Cooper Henry's Mill, Balltown and Wardwell pools in Warren and Furst counties; rocket-like career of Thorn Creek, Butler County; the opening of Kinzua, in Warren County; Red Valley, in Venange County; Cogley Run, in Clarion County; Washington, in Washington County, and several other pools and extensions in the old districts. Mr. Carll states as a rather remarkable fact that no new productive horizon has been discovered sin He gives sections showing the positions of the several oil and gas producing horizons relatively to the key rocks, which are the Olean conglomerate along the nortwestern and northern outcrop, the Sub-Olean, in Furst and Elk counties, the Ferriferous

rease, stability or decline of the oil production in the different districts, as dicfollows one of the admirable papers by Mr. Lesley, in which he takes strong ground against the position often taken by oilmen and the community at large that the Geological Survey is merely collecting facts established by drilling, that it follows in-stead of leading the driller, and that therecollecting facts fore its utility to that interest is a very modest one. Mr. Lesley quotes at length an article published by Mr. Carll in 1876, in which it is clearly shown that the work of edge possessed by citizens of Western Penn-sylvania. In a paper added at the end of the volume Professor Lesley discusses the pressure, quantity, composition and fuel value of natural gas, incidentally arguing value of natural gas, incidentally arguing against the calculation put forward in The Iron Age by Dr. H. M. Chance some time since. He closes this paper with a reply to a question which probably has been uppermost in the mind of every great consumer of coal for the last two years, "Shall I bore for gas at my works?" He answers it as follows: follows

First of all, there can be no gas stored up in the oldest rocks. This at once settles the question in the negative for the whole southastern third of the State. To bore for gas in Bucks, Montgomery, Philadelphia, Delaware, Chester, Lancaster, York or Adams counties would be simply absurd.

Secondly, there can be no gas left underground where the old rocks have been

turned up on edge and overturned, fractured and recemented, faulted and disturbed in a thousand ways. If there ever was any, it has long since found innumerable ways of escape into the atmosphere. This settles the question in the negative for all the counties in the great valley: Northampton, Le-high, Berks, Lebanon, Dauphin, Cumber-land and Franklin, as any one can see by looking at the present condition of their limestone, slate and sandstone formations.

Thirdly, there is not the least chance that any gas is left underground in the greatly folded, faulted, crushed and hardened for mations of the middle belt of the State— Carbon, Schuylkill, Lehigh, Lucerne, Columbia, Montour, Northumberland, Union, Snyder, Lycoming, Perry, Juniata, Mifflin, Center, Clinton, Huntington, Blair, Bedford and Eulton counting. Where the oil and gas Fulton counties. Where the oil and gas rocks rise to the surface in these counties, as they do in a thousand places, they show that all their oil and gas has escaped long

Fourthly, where the rock formations lie pretty flat and have remained nearly undis-turbed over extensive areas, as in Wayne and Susquehanna, parts of Pike and Lacka-wanna, Wyoming, Bradford, Tioga, Potter, and all the counties west of the Alleghany Mountains, there is always a chance of find-ing gas, if not oil, at some depth beneath the surface determined by the particular formation which appears at the surface; but as yet we have no satisfactory evidence of the existence of quantities of rock gas in any of these counties east of Potter.

Fifthly, wherever the bituminous coal-beds have been changed into anthracite or semi-bituminous coal it is reasonable to suppose that the same agency which pro-duced the change, whatever it was, must have acted upon the whole column of forma-tions, including any possible gas rock at any depth.

Sixthly, wherever rock oil has been found, there and in the surrounding region rock gas is sure to exist.

REPORT ON THE CORNWALL IRON ORE MINES, LEBANON COUNTY. By J. P. Lesley and E. V. D'Invilliers.

The greater part of this valuable report has been used in substance in Mr. D'Invilliers' paper read before the American Institute of Mining Engineers, full abstracts of which were printed in The Iron Age at the time. It is a matter of some surprise to us that Mr. D'Invilliers does not emphasize were the growing use of Cornwall ore for more the growing use of Cornwall ore for Bessemer purposes, since that is a factor which is giving mining of the Cornwall de-posits a very great impetus.

THE VEGETABLE ORIGIN OF COAL. By Leo Les

The venerable fossil botanist of the Survey, as his title appears to be, Leo Lesque-reux, now 80 years of age, contributes a small popular review of the much discussed subct, the origin of coal, which we possess. Mr. Lesquereux is an ardent advocate of the bog theory. A life-long study of peat de-posits in many parts of the world has enposits in many parts of the world has en-abled him to marshal an array of data from the convincing inferences of which it is in-deed difficult to escape.

NOTES ON THE QUARTERNARY GEOLOGY OF NOTES ON THE QUARTERARY GEOLOGY OF THE WYOMING LACKAWANNA VALLEY. I. DESCRIPTION Of the Arch baid Pot-Holes; also of the Buried Valley of Newport Creek, with Special Reference to the Nanticoke Mine Disaster. By Charles A. Ashburner. II. Description of the Buried Wyoming Valley between Pittston and Kingston. By Frank A. Hill. III. Description of a New Substance Resembling Dopplemite from a Post-Glacial Peat Bog at Scranton. By Prof. Heary Carvill Lewis.

At the Bethlehem meeting of the Ameri can Institute of Mining Engineers, Mr. C. A. Ashburner developed his explanation of the Nanticoke disaster, which is more fully carried out in this report, which is accompanied, too, by two excellent heliotypes of one of the Archbald pot-holes.

REPORT ON THE BERNICE COAL BASIN, IN THE LOYAL-BOCK AND MEROOPANY COAL FIELDS, SULLIVAN COUNTY. By C. A. Ashburner. Accompanied by Notes on the Mekoopany Coal Field. By Frank A. Hill.

The Bernice or Loyalsock coal field has been one of the most interesting to the coal trade in some respects, having furnished food for considerable controversy, only a few years since, on the point whether or not it is an anthracite. The Geological Survey has come to the aid of the State Line and Sullivan

burner says: "Not until the Geological Survey had made numerous analyses of the tated by their more recent history, which are shown on a map accompanying sessed a composition which would entitle it are shown on a map accompanying sessed a composition which would entitle it the report, together with the gas pools now being exploited. The explanatory notes relating to this feature of the map fill the third chapter. A fourth criticises the many theories relating to oil and gas. Then the operators had designed a mechanical method of preparing the coal, and had re-moved the prejudice of the coal trade and consumers against the coal, which they had always been disposed to regard as bitumi-nous and not anthracite, was the coal rated by the trade either as a competing fuel of the soft anthracites or as a specialty. The free-burning character of this coal, the property it possesses of continuing to burn under conditions in which fires made of article published by Mr. Carll in 1876, in which it is clearly shown that the work of the Survey has been in advance of the knowlsults from combustion, and which seldom has a tendency to clinker, render the coal a desirable fuel.

NOTES ON THE MOUNTAIN LIMESTONE IN THE WASHINGTON COUNTY GAS WELLS. By Profs. Alongo Linn and Edward Linton.

THE COAL BEDS AND FIRE CLAYS OF THE WELLERBURG BASIN, SOMERSET COUNTY. By J. P. Lesley.

REPORT ON THE TIPTON RIVER COAL OPENINGS, BLAIR COUNTY. By C. A. AShburner.

Mr. D'Invilliers has undertaken the work of carefully studying the geological structure of the Great Pittsburgh Bed, which, Professor Lesley says, contains available for market 5,000,000,000 tons—enough to last for centuries. This closer study will locate more accurately the anticlinals and synclinals; in fact, in one case—the Peters Creek axis—the Survey has already revised former work. In speaking of the coal from the Pittsburgh bed, Mr. D'Invilliers says: "There seems to be no fairly defined line of demarkation as between gas, steam or coking coal. Analysis and structure re-veal nothing; but practice, the characteristics of the coal, and perhaps sometimes a little prejudice, have fixed these limits as they now exist. A peculiar instance of this arbitrary rule is the grading of coals of the various pools along the Monongahela River, and the affixing of varying prices in the markets of the country for their product which is frequently not warranted by any difference in the coal itself. There is some variation occasionally and often within narrow limits of area, but no law for this fact has yet been satisfactorily applied.

THE ORIGIN AND DISTRIBUTION OF THE DELA-WARE AND CHESTER KAOLIN DEPOSITS. By J. P. Lesley.

REPORT ON THE BRANDYWINE SUMMIT KAOLIN BED. By C. A. Ashburner,

REPORT ON THE WYOMING VALLEY LIMESTONE BEDS. By C. A. Ashburner. Accompanied by a Description of the Fossis Contained in the Same. By Prof. Angelo Heilpin.

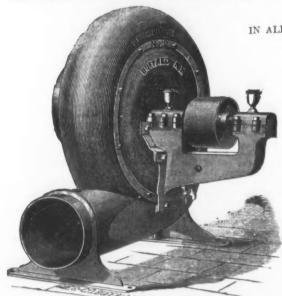
Old Roman Lead .- Recently, while the excavations for the new gasholder tank at the Chester, England, gas works were in the Chester, England, gas works were in progress, a pig of Roman lead in excellent preservation was discovered at a depth of 23 feet below the ground. It bears on its upper surface the following inscription: "IMP VESP AVG V T IMP III," while on the side is inscribed "DE. CEANGI." Its weight is 192 pounds. The translation of the inscription is that it was a pig of lead, a tribute to the Roman power from the tribe in North Wales commonly known as the in North Wales commonly known as the Ceangi. The inscription tells us that it was cast during the fifth consulate of the Emperor Vespasian and the third consulate of Titus. This synchronizes with our date A. D. 74 and consequently it may be assumed that the pig of lead has been lying where it was found some 1800 years. The ground wherein it was discovered was gravel and marl, which evidently formed part of the old river bed. Close to it was found a human skull, and another was discovered about 15 feet away. The skulls and bones of horses and bullocks The skulls and bones of horses and bullocks were also met with in or about the same place. The foreman of the works, Mr. J. Fish, at once called the attention of the company's engineer, Mr. F. W. Stevenson, Assoc. M. Inst. C. E., to the discovery, and the treasure trove was placed in safe keeping. As the ground has to be excavated 3 feet further discoveries may be expected.

A correspondent of the Engineer writes as follows: "The Belgians are competing with the North of England in bridgework and other material in a somewhat unpleasant manner. A short time since a steamer arrived in the Tees from Antwerp with 600 tons on board for India. It was immediately unloaded and transferred to a large export vessel about to sail for Bombay. A quantity of material used in and about mines, such of material used in and about mines, such as girders, rails, locomotives, winding engines, pulleys, wire ropes, and so forth, for the production of which the North of England is eminently suited, is now going to Spain from Belgium and Germany, and English producers are not even invited to quote. The reason for this is that the Spanish import duties favor those countries, to the disadvantage of this country. The Belgian bridge and girder work appears, in beight bridge and girder work appears, in finish and in quality of material used, much inferior to the English, but cheapness, arising from less duty, settles the question in nine cases out of ten."

The bill providing for the increase of the navy was so amended as to authorize a con-tract with the Pneumatic Dynamite Gun Company, of New York, for one dynamite gun cruiser, to be not less than 230 feet long by 6 feet breadth of beam, 7½ feet draft, 3200 horse power and guaranteed to attain a speed of 20 knots an hour, and to be equipped with their pneumatic dynamite guns of 10 1/2-inch caliber, and guaranteed to throw shells containing 200 pounds of dynamite or other high explosives at least I mile, each gun to be capable of being dis charged once in two minutes, at a price not

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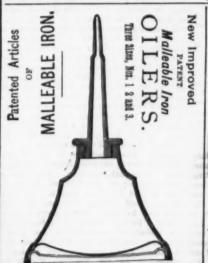
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RIDER HOT-AIR PUMPING ENGINE, 10-inch.

GAS ENGINE, 1 Horse Power. Careful attention given to purchasing for parties out of the city. given to purchasing for parties out of the city.

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so tons German Puddled Iron Wire Rods No. 5 G of good quality. Address "G. H. F. 85," Office of *l'he Iron Age*, 66 and 68 Duane St., N. Y

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19 in. Ames Engine.
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19 in. x 10 in. Horizontal Engine.
19 in. Y. 10 in. Horizontal Engine.
19 in. Y. 10 in. Horizontal Engine.
10 in. H.-P. Baxter Engine.
10 in. H.-P. Baxter Engine.
10 in. H.-P. Baxter Engine.
11 in. Horizontal Engine.
12 in. x 12 in. Horizontal Engine.
14 in. Y. 15 in. Horizontal Engine.
16 in. X 12 in. Horizontal Engine.
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H.-P. Baxter Engine.

x 12 Double-Drum Hoisting Engine
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x 16 Horizontal Tubular Boiler.

1 42 in. x to ft. Locomotive Boller.
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4 in.
4 in. x 6 ft. x 5 ft. x 5 ft. x in.
Tanks, 8 ft. x 5 ft. x 5 ft.

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Tanks, 8 ft. x 5 ft. x 5 ft. 3 in.
Tank, 8 ft. diam. x 8 ft. high.
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The Mines are fully devel ped and in first class working order, and the works are now in operation.

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I he Dominion Parliament has granted a bounty on all Pig Iron manufactured in the Dominion of

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Steel Roiler, accustomed to 16 or 18 in. mills,
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Apply to
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1 Engine Lathe, 48 in. x 20 ft. bed.

2 in. x 18 ft.

2 in. x 18 ft.

2 in. x 18 ft.

2 in. x 12 ft.

2 in. x 2 in. x 20 in. and 24 ft

2 in. x 2 in. x 2 in. and 24 ft

2 in. x 2 in. x 2 in.

2 in. x 2 ft.

3 in. x 3 ft.

4 in. x 4 in. x 4 in.

4 in. x 4 in. x 4 in.

5 in. x 2 ft.

5 in. x 2 ft.

6 in. x 2 in. x 5 ft.

6 in. x 2 in. x 5 ft.

6 in. x 2 in. x 5 ft.

6 in. x 2 in. x 2 in. x 3 in.

6 in. x 2 in. x 2 in.

7 in. x 3 ft.

8 in. x 2 ft.

8 in. x 2 ft.

9 in. x 2 in. x 2 in.

9 in. x 2 in. x 2 in.

10 in. x 2 in. x 3 in.

10 in. x 3 in.

10 in. x 3 in. x 4 in.

10 in. x 3 in.

10 in. x 3 in.

10 in. x 3 in. x 4 in.

10 in. x 3 in.

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1 No. 20 Bluss Press.
10 Foot Presses, assorted.
1 Power
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Patented Riveting Machine

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BY STATES OR TERRITORIES.

Capable of riveting from No. 18 Wire to 1/4 inch fron; will make any shaped head (flush or raised), and tight or loose joints.

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6284 feet of 2½ inch Cold-Rolled Shafting
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300 Couplings.
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70 Couplings.
70 Couplings.
71 Couplings.
72 Couplings.
73 Couplings.
74 Couplings.
75 Couplings.
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77 Couplings.
78 Pilcow Blocks.
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79 Couplings.
70 Couplings.
71 Couplings.
72 Couplings.
73 Couplings.
74 Couplings.

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A manufacturing concern, long and well established, desires to make a change from a small place with no railroad to some live town of 5000 or over. The line of goods is a very fine one, and sell to the Hardware Trade. About 100 of the best class of mechanics are employed, and the number can be largely increased. This is a rare chance for some good place to secure one of the finest branches of manufacturing. Correspondence is solicited, setting forth advantages, inducements, &c.

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25 in. x 10 ft.	Pond. Good.	
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18 in. x 12 ft.

19 in. x 10 ft. Engine Lathe.

20 in. x 10 ft. Engine Lathe.

29 in. x 10 ft. Engine Lathe.

29 in. x 10 ft. Engine Lathe.

29 in. x 10 ft.

20 in. x 10 ft.

20 in. Upright Drill,

34 in. x 12 ft.

35 in. Upright Drill,

36 in. Upright Drill,

36 in. Upright Drill,

37 in. Harrisburg.

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38 in. Prentice.

19 in. stroke Sellers' Traveling Head Shaper.

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24 in. Shaper.

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30 in. Upright Drill,

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30 in. Shaper.

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Three-Spindle Nut Tapper. Hoop Iron Testing Machine, Column Milling Machine, 16 in. x 8 ft Lathe, Small Slotter, Ames Gear Cutter, two Boit

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New to H.-P. worm-geared Hoisting Engines: Steam Cylinder 6 in. bore, 8 in. stroke; geared 16 to 1; Drum so in. diameter, 18 in. long; im proved Cone Friction for Holating and Lowering Same style, double cylinders, so h. . P. Warrious Elevators. All attachments.

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One 20 x 48 Horiz. Corliss Engine.
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One Horiz. Tubular Boller, 80 H.-P.
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One Golden Street Shell.
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One Eron Planer, 28 x 28 x 6 ft. New Haven Mach. Co.
But Charles Shall An Engine Control of the Con

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One Profiling Machine One Axle Lathe, for car axles. One Durrell 7 Spindle Nut Tapper.

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One 26 x 42 in. Hor Engine, Goodwin Cut-off.
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Write and say what you want I have a large stock, constantly changing.

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The largest and most reliable stock of Engines and Boilers in America. All sizes and styles, and all made of the very best material at lower prices than common, cheap country-made work can be sold. These Engines are all made interchangeable dy special machinery. Agents wanted, and orders from the Trade solicited. Write for Illustrated Catalogue and particulars

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Specialties in Cutlery. One 17 ft. bed. 30 in. Engine Lathe

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A Chemist. One experienced in Blast-Furnace and Open-Hearth Steel Works preferred. To conduct laboratory work, &c.

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Damaged Band and Rod Iron.

For sale low, or in exchange for Scrap Iron

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Special Sale of Second-Hand, in Good Order.

1%	н. Р.	Engine	Bug	Rolle's	\$50.
Iâ.	6.0	6.6	9.6	0.0	\$126.
214	4.6	0.6	0.9	0.6	\$150.
277	46	64	6.6	64	\$140.
13	9.0	9.6	0.0	44	\$150.
12	0.0	6-6	0.6	6-6	5.75
l ä	0.0	8.6	69	8.6	with hoisting rig, \$250.
To	60		44	0.0	11 H H Sage
10	60	99	44	44	on wheels, \$100
10	0.0	99	9.0	44	" skids, \$275.
100	H.P.	Engine	811	re : fan	HP. Engine, \$190, and
St	many cam I	others.	njec	tors,	Fube Cleaners, &c., 40 S
	C-80. VA				TOOL CO

HAND,

CHEAP. fitted.
One Foot-Power Screw-Cutting Lathe.
One Profiling or Edging Machine.
One No. 3 Brown & Sharpe Screw Machine.
One -spindle Prstt & Whitney Drill.
One 4-Spindle Garvin Drill.
One Putnam Machine Co. Milling Machine.

coin Pattern.
One 2-in. Pipe Threading and Cutting Machine.
One small Drop Press, with Power Lift,
Send for List of Second hand Tools. New York Machinery Depot,

Bridge Store No. 16, on Frankfort St.,

NEW YORK. FOR SALE AT VERV LOW PRICES—Several new Engine Lathes of 10 in., 15 in., 24 in. and 25 in. a sing of late design, with great power and all modern improvements. For description and prices, address J. B. REED,

Ca'ro, Ili.

FOR NALE.—An old and well-established Hard-ware business in one of the best locations in Kansas City, Mo. For further particulars, address " NAILS," BOX 22,

Office of The Iron Age, 66 and 68 Duane St., N. Y.

COMMISSION.

Wanted, parties traveling with Hardware to neli my patent Steel Wire Anti-Rattlers on com-Boston, Mass., stating route.

RCHITECTURAL IRON WORK.—A competent were lower, and coal shares were neglected.

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On Monday there was a better feeling, any January I of \$42,693,514, of which \$5,682,°

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on that as well as the day following there was a better feeling, any January I of \$42,693,514, of which \$5,682,°

on that as well as the day following there was a better feeling, and the superintendent or Foreman in fitting or erecting architectural Iron work. No lobjections to leave the was a better feeling, any January I of \$42,693,514, of which \$5,682,°

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on that as well as the day following there was a better feeling, any January I of \$42,693,514, of which \$5,682,°

coo was silver, as compared with \$16,471,°

Caroline 2.54 pounds of coal per hour per indicated horse-power.

Trade Report

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.] LONDON, WEDNESDAY, July 28, 1886.

Scotch Pig.—The market is irregular. No feature of interest to note. We make slight changes in quotations as follows:

Coltness, alongside, Glasgow. Langloan, Gartsherrie, Carnbroe,
Glegarnock,
Eglinton,
Dalmellington,
Shotts, Ardrossan. at Leith. Carriage from Ardrossan to Glasgow is 1/ 2 ton.

Cleveland Pig.-The market is dull and We continue quotations as folows, f.o.b. shipping ports : Middlesboro', No. 1 Foundry

No. 2 No. 8 No. 4 Forge... ...30 @ 30/6 ...29/6 Bessemer Pig-The market is a little

teadier, but the improvement is not sufficiently pronounced to justify a change in quotations, which remain as follows: W. C. Hematites, 42/ for mixed lots, Nos. 1, 2 and 3, equal portions, f.o.b. shipping ports. Manufactured Iron.-No change of any kind to report. The market continues ir-

regular, as reported for several weeks past : £ s. d. £ s. 7 0 0 @ 7 10 5 10 0 @ 6 0 4 17 6 @ 5 5 Staff, Ord. Marked Bars... Medium "... Common best...

Medium

Common Best...

Medium

Common Sheets, 20 W. G. and under.

Ordinary Best...

Common... 15 0 @ 0 0 @ 5 0 @

Steel Rails. - The market remains steady, with no change in prices, which remain the same as quoted last week, viz. £3. 7/6 @ £3. 10/, f.o.b. shipping ports.

Old Rails.-There is no change in this narket; quotations are as follows: Old D. H.'s, c.i.f. New York, 55/.

Scrap.—The Scrap market is unchanged. and prices are quoted as follows: Heavy Wrought, 50/; Bessemer Crop Ends, run of mill, 54/@ 56/, c.i.f. New York.

Copper.-The market is practically unchanged, though we make slight changes in quotations, viz.: Best Selected, £42. 10/@ £43, and Chili Bars, £39 @ £39. 5/.

Tin .- The market is weak and unsettled. We make slight changes from last week's quotations, viz. : Straits Tip, spot, £97. 15/ @ £98. 5/, and futures £98. 10/ @ £99.

Tin Plates.—The market is unchanged and last week's prices may be quoted, viz.

Spelter.-There is no change worth reporting in this market. Prices may be quoted for Ordinary at shipping ports, £13.

Lead .- No change in this market ; quotations remain the same, viz. : Common English Pig, £13. 15/ @ £14.

Freighta.—Steam from Glasgow to New York, 5/.

Financial.

Office of The Iron Age, WEDNESDAY EVENING, July 28, 1866.

General business moves along hopefully, with the current of events generally favorable as to the present situation and prospects for the autumn. The adjournment of Congress will remove a source of uneasiness, although the feeling in mercantile circles is most decidedly condemnatory of its recreant course touching the silver question. On this point there is no assurance of rest. Silver bullion, which was quoted in London at 44% d. a fortnight ago, is now valued at 43.4d. P ounce, so that the intrinsic Comptroller of the Currency Trenholm will value of the Bland dollar to-day is speak upon the national bank system in the As to the Morrison resolutions looking to a depletion of the Treasury, there is reason to think that this object will be defeated. Railroad earnings, as shown by the latest reports, are favorable. The export trade is stimulated by a decline in wheat, prompting more liberal shipments. Among the grocery jobbers business is exceptionally good, interior buyers seeming to anticipate a hardening of values. Among dry-goods jobbers sales have been maintained in good proportion, and manufacturers in both cotton and wool speak of buyers as operating more liberally. The coal trade remains essentially unchanged, despite an advance of 15 @ 20¢ P ton in prices, dealers as yet failing to respond, but the trade are relying upon a more scrupulous regard for the rules governing production.

The stock markets have been irregular and dull. On Thursday an advance in the prices for anthracite coal made the whole list strong, but on Friday there was a slight reaction. On Friday Northern Pacific advanced on the announcement of a land sale of 2,000,000 acres at an average of mission to the Hardware Trade. Address for par- \$2 per acre, but the rest of the market was ticulars, STILES FROST, 178 Devonshire St., heavy. On Saturday there was a further

To-day the trunk lines were strong and constituted the principal feature. tations as follows: Lackawanna, 1281/4 Delaware and Hudson, 99; Indiana, Bloomington and Western, 17: Lake Shore, 87%; Michigan Central, 78; Missouri Pacific, 109; New York Central, 1091/8; New York and New England, 46%; Northwestern, 113; St. Paul, 92%; Western Union, 67%; Burlington and Quincy, 133%; Consolidated Gas, 821/4; Jersey Central, 553/8; Northern Pacific, 28%; Oregon Navigation, 107% Oregon and Transatlantic, 34; Pacific Mail, 565%; Southern Pacific, 39.

United States bonds closed as follows: 13716

Money has a hardening tendency, call loans having ranged as high as 4 %. Commercial paper is in good supply, but the demand is limited, banks generally finding a satisfactory inquiry from their regular cus- the New York imports were a little over tomers without going into the market for 64%, and the exports hence were 48%% of paper. We quote 60 to 90 days' paper 4 @ the total foreign commerce of the Union. 41/2 %; longer dates, 5 @ 61/2 %. The weekly bank statement shows little change beyond a shrinkage of \$1,915,100 in deposits, the surplus reserve standing at \$14,270,200, as compared with \$64,300,000 a year ago and \$30,628,000 in 1884. The Bank of England discount rate remains at 2 1/2 %. The bank is lower than usual, both in bullion and reserve, due to gold withdrawals, notwithstanding the receipt of nearly \$14,500,000 from the United States within the last six months. A return of gold to America in payment for produce and securities is thought not improbable. The market for bankers' sterling is weak, in consequence of the pressure of bankers' bills drawn against securities.

The general condition of business in different sections of the country, taking one part with another, is variable, but as a whole there are signs of continued improvement. This is indicated by the bank clearances at 30 leading cities, which last week showed a gain of over 4 % compared with 1885; exclusive of New York, a gain of nearly 27 %. It is significant that only two cities reported decreases, and of these New York was one with 5 %, which is accounted for by the tameness of speculation on the Stock Exchange at the present time compared with the corresponding date one year ago. Boston, although reporting an increase of 32 %, is slightly clouded by labor troubles among the shoemakers and tanners, but nearly all the factories are running, with large contracts in hand. In Chicago a conviction that the prices of merchandise are likely to advance acts as a stimulus to consumers; merchants are filling a good line of orders for the interior; collections are as easy as in former seasons at this date, and it would appear that the better condition of things prevailing before the labor agitation is being gradually restored. In Philadelphia there is a little increase in the distribution of manufactured goods. From Savannah and Charleston accounts are rather desponding than otherwise, owing to heavy rains. In St. Louis banking movements are active in anticipation of the harvest.

The annual convention of the American Bankers' Association will be held at Horticultural Hall, in Boston, Wednesday and Thursday, August 11 and 12. This association is composed of the officers of the national banks, 2800 in number; of the officers of the State banks, 1350; of the officers of the savings banks, 586, and of the private banks, about 3600. Lyman J. Gage, of Chicago, is the president; Logan C. Murray, of this city, first vice-president; George S. Coe, chairman of the Executive Council. The three great topics of the convention this year, according to Doctor Marsland, are banking reform, the silver problem in its new international aspects, and the defects of our extradition treaties. speak upon the national bank system in the South and the best way of extending it. There will be an address upon the desirability of allowing national banks to make loans upon real estate as collateral security. an address upon the feasibility of changing the national-bank system of this country so as to allow of the establishment of branch kind to be done. The engravings, are finely banks, such as exist in England and France, and an address upon the creating of more specimens of the art. The catalogue conand an address upon the creating of more safeguards against the impairment of bills of lading as collateral security.

The imports of merchandise at this port during the week were \$2,491,063 above those of the previous week, the total being \$9,942,-745, including \$2,770,370 in dry goods, and tyting and printing, and has probably one of of the previous week, the total being \$9,942, 745, including \$2,779,370 in dry goods, and making the aggregate since January 1 \$242,-426,438, as compared with \$217,522,852 for the same time in 1885, and \$254,345,,055 in 1884. The exports were \$902,676 above those of the previous week, the total valuation being \$7,208,209, making the aggregate since January 1 \$177,901,930, as against \$190,-311,000 for the same time in 1885 and \$179. 157,000 in 1884. The items include 872,382 bushels wheat, 353,979 bushels corn, 21,313 Company. The Oregonian states that this bales cotton, 5,147,992 gallons petroleum, suit means that the works will be tied up 5,988,937 fb cut meats.

According to the Custom-house reports rise, but the grangers and other properties the exports of specie from this port during were \$16,207, making a total since January 1 of \$6,318,412.

The official statement of the foreign commerce of the United States for the fiscal year ending June 30 shows the excess of exports over imports to have been \$78,638, 335, as follows:

ing with June, 1886. \$679,425,972 72,454,410 Exports of merchandise. \$55,808,446
Exports of specie...... 10,234,274 Total exports... Imports of merchandise. Imports of specie.....

Total imports..... Excess of exports... \$54,891,407 11,151,313 The excess of exports for the year ending June 30, 1885, amounted to \$163,651,628. There has been the last fiscal year an increase of over \$50,000,000 in the imports and a decrease of over \$30,000,000 in the exports. For the year ending June 30, 1885, New York received about 65 % of the total foreign imports, and shipped about 461/2 % of the total exports to foreign countries For the fiscal year ending with June, 1886,

It is announced to-day that the old chem cal firm of Martin Kalbfleisch's Sons is to be wound up on account of differences between partners. The assets are supposed to be \$500,000 in excess of liabilities.

TRADE PUBLICATIONS.

Steam Heating.

F. B. Bannon, of Pottsville, Pa., has just sent us a catalogue devoted to steam heatradiators, radiator-valves, low-pressure automatic water-feeders, air-valves, &c.
The different appliances are briefly described and tables of sizes and prices are furnished. Accompanying the catalogue we find a small circular devoted to a vertical engine built by him. This engine is particularly adapted for printing and new-paper offices, sawmills, grain elevators, pile drivers and other work.

Railway, Machinists' and Engineers' Supplies.

The New York Supply Company, of 50 and 52 John street, New York, have just issued a large illustrated circular, printed on heavy paper, devoted to their different supplies for railways, machinists and engineers, mills, &c. The cuts, which are well executed, show steam cocks and whistles, water gauges for boilers, tool grinders, governors, engine lathes, emery-wheels and a large number of other tools and appliances. The cuts are well arranged, making the circular attractive in appearance and of interest and value to the trade.

Korting Exhaust Steam Induction Condenser.

Mr. A. Aller, of No. 109 Liberty street, New York, has just issued an interesting little phamphlet devoted to the Korting exhaust steam induction condenser. Aller describes the merits and benefits of effective condensation in general when ap plied to steam engines or other machinery, and then enters into a description of the Korting condenser as an effective and practical means of accomplishing the object. General and detailed views of the device are supplied, together with cuts of pipes and connections, strainers, &c., and also illustrations of a contensor attached to suit a variety of local conditions. Steam users will find the little book to contain much information of practical value, and should give it careful attention.

General Machinery.

The Bignall & Keeler Mfg. Company, of St. Louis, Mo., have issued a new catalogue of their pipe and bolt machines, shapers, or their pipe and bolt machines, snapers, lathes, emery grinders, drive-well points, screw punches and iron-working machinery in general. It embraces 48 pages and is profusely illustrated. Descriptions of different machines are supplied and price lists and tables of dimensions are added. Those interested in metal-working machinery will find in it some things of value

Wood Engraving.

A neat and attractive catalogue recently ant us by A. Mugford, of 63 Asylum street, Hartford, Conn., contains a large number of specimens of wood engraving, nearly all of which are of a mechanical character and will accordingly prove of interest to many of our readers who have work of this tains also chapters on drawing and photographing as applied to mechanical pur-poses, illustrated work for commercial purposes, &c., which will be found to co Mr. Mugford the largest establishments in the country for engraving and printing manufacturers catalogues. What he has to say on the subject is therefore of some interest and deserves attention.

A suit was begun in the State Circuit Court of Oregon in the case of S. G. Reed vs. Elijah Smith, C. J. Smith and L. B. seley, involving a contest over the ele of directors of the Oregon Iron and Steel indefinitely.

Of the vessels of the British navy working with a forced draft the Mercy burns 2,48

Trade Report

New York.

American Pig. -So far as Foundry Irons are concerned the situation remains practically unchanged. Consumers are taking a great deal of Iron, and as a rule are hurrying deliveries, allowing their stocks to run v before they enter into engagements for further small quantities. The result is frequent embarrassment to furnace companies. We hear of some sales of Southern Irons for delivery during the fall. One of the leading furnace companies has declined to name prices for large blocks for delivery into next year. We quote standard brands Foundry No. 1, \$18 @ \$18 50; No. 2, \$17 @ \$17.50, and Gray Forge, \$15.75 @ \$16.25. On outside brands concessions of 50¢ are usual.

Scotch Pig.-Arrivals are light, the demand slack and little pressure to We quote nominally as follows for small lots: Coltness, \$19.75 @ \$20 to arrive; Gartsherrie, \$19 @ \$19.25 to arrive; Shotts and Langloan, \$19.50 @ \$20 to arrive; Carnbroe and Glengaraock, \$18.50 @ \$19 to arrive; Summerlee, \$19.25 @ \$19.50 to arrive; Dalmellington, \$18.50 @ \$18.75 to arrive; Eglinton, \$17.50 @ \$18 to arrive, and Clyde, \$18 @ \$18.50 to

Bessemer Pig.-We hear of no business in Foreign Iron, nor does any seem probable in the near future, in view of the large quantities of Domestic Iron contracted for by the leading Steel companies, some of whom, in fact, have more than covered their requirements. During the past two weeks heavy purchases have been made of Domestic Bessemer on the part of importers of Foreign Ore. We quote nominally \$18 @ \$18.25 for Domestic Furnace and \$18.75 @ \$19 at tidewater for ordinary Foreign

Spiegeleisen.-There has been no business of any consequence during the current week; prices continue nominally unchanged at \$25 @ \$25.25 for 20 % English, and \$24.75

Bar Iron.-Philadelphia mills have conceded the demand of the men, making the Foundry is quoted at \$17 @ \$17.50, but 2-cent card rate the minimum in the sliding scale of wages. This, however, is not likely over \$17 unless the brand is a spe-to have much effect upon this market, which indeed hardly felt the stoppage of about a ing a little more activity, but prices are month. We continue to quote for delivery here in round lots: Common Iron, 1.65¢ @ 1.70¢; Medium, 1.70¢ @ 1.75¢, and Refined Iron, 1.75¢ @ 1.9¢. Store prices are 1.75¢ sized lots have been taken, however-sev-@ 1.80¢ for Common, 1.85¢ @ 1.90¢ for Medium, and 1.9# @ 2.2# for Refined.

Structural Iron and Steel.-The market has been quiet and steady during the week. We quote for Angles 2¢ @ 2.10¢, delivered, and Tees at 2.40¢ @ 2.45¢, for round lots. Steel Angles are quoted 2.35# @ 2.45#, according to quality. Store quotations remain 2.25¢ @ 2.4¢ for Angles, and 2.6¢ @ 2.7¢ for Tees. American Beams and Channels are nominally 3¢ base from dock for all

Plates.—We quote for round lots: Common or Tank, 2.10¢ @ 2.20¢; Refined, 21/4 @ 21/4; Shell, 2.4 @ 21/4; Flange, 3.4¢ @ 3½¢; Flange, Extra 4¢ @ 4¼¢. For small lots of Steel Plates the quotations are as follows: Tank, 2.70¢ @ 2.75¢; Ship, 3¢; Shell, 3¼¢; Flange, 31/2¢, and Fire-Box, 4¢ @ 41/2¢, on dock.

Merchant Steel .- We quote nominally for the range of ordinary to good grades as follows: American Tool Steels, 71/2 @ 9¢; Tool Steel of special grades and finer qualities, 12¢ @ 20¢; English Tool, 13¢ @ 151/4¢; common grades, 7¢ @ 9¢; Crucible Machinery, 3.75¢ @ 4.50¢; Round and Flat Spring, 2.25 @ 2.5 ; Round-Edge Tire, 2.25 ¢ @ 2.5#; Square-Edge Tire, 2.5# @ 2.7#; Toe Calk, 2.5 @ 2.6¢; Sleigh Shoe, 2.25¢ @ 2.5¢; Open-Hearth Machinery, 2.3¢ @ 2.6¢, \$19 @ \$19.25, c.i.f. Spiegel held at \$25.25 and Bessemer Machinery, 2.1¢ @ 2.25¢, with freight allowance.

Steel Billets.-Inquiries are in the for the Pittsburgh district. There is a sharp competition for this business between importers and the mills of the Pittsburgh district. These inquiries call for fall delivery, which it is somewhat difficult for importers to meet. We understand that the bulk of the Steel so called for is 21/2 inch square Billets. We quote nominally \$28, which would be equivalent to about \$30 in Pittsburgh, or \$1 above that market.

Steel Wire Rods. -Business remains in the unsatisfactory condition in which it has been for some time, with occasional orders, for which low quotations are made. We quote nominally \$37 @ \$37.50.

Steel Rails.-We hear of sales aggregating about 12,000 tons, the bulk for fall delivery, although some small orders have been taken for early shipment from mill. The condition of affairs remains much the being well supplied up to September and the men for a new schedule, with 2# as a and this has a good deal to do with its reali-October, but somewhat eager for work minimum. Opinions differ as to the wisdom zation. It is expected that within a week beyond that date. One of the leading West- of this course, but, taking everything into or two orders for all kinds of manufactured ern Rail makers has been credited with the statement that toward the end of the year | could be done. In the first place, it is un- freely, and there is no good reason apparent | inquiry, and the mills here, as elsewhere, a slight decline may be looked for. hear rumors of sales of Foreign Rails, battle for all the mills in the neighborhood, be realized. One of the most encouraging August or September. Some of them, it is the quantity named being about 10,000 tons, The price for puddling is to a great extent signs of the times is an absence of the wild on the basis of about \$37.50 at New Orleans. influenced by the Philadelphia mills. While speculative mania which sometimes sets in It is stated also that one of the Steel mills the latter have been shut down the others have when there is a prospect of a better condicash, at mill. which has a rolling capacity greater than its been running with the understanding that tion of trade, as is the case at present. The Old Material.—There is a fair business;

Foreign Roll Blooms. There are inquiries in Foreign Blooms at tidewater is \$24.50 @ \$25.

Old Rails .- The demand continues very light, while the available Old Rails, especially in large blocks, are very heavy. They are not, however, offered at lower than \$18.75, tidewater delivery, while buyers rarely go as high as \$18.50. We hear of only small sales in this market during the current week, and quote \$18.50 @ \$18.75.

Scrap.-The market continues quiet a \$18.25 @ \$18.50 for No. 1 from yard, with the majority of the stock, which is small, held at higher figures.

Rail Fastenings .- Current business i mall, the mills being employed pretty fully, owever, on old orders. We quote nomi nally 2.40¢, delivered, for Spikes, with conessions for good orders; 1.80¢ @ 2¢ for Angle Fish Bars.

Philadelphia.

Office of The Iron Age, 220 South Fourth St., PHILADELPHIA, July 27, 1886.

Pig Iron. -There is no special change of feature to notice, the demand being fair at about last week's prices. There is a better feeling, however, and holders show more confidence in values, and are less urgent in asking for bids, although as yet consumers are comparatively indifferent and are buying very carefully at about last week's prices. No. 1 Foundry is the firmest article on the list, the supply being extremely light, and in many cases furnaces are close sold up for some weeks to come. No. 2 Foundry is in abundant supply, but the demand is not large, and holders are glad to work it off as best they can. Mill Irons have been neglected for several weeks past, but with the starting up of the mills the demand is likely to be more in proportion to the supply than it has been. Prices, as already noted, are a little irregular, firm on No. 1 Foundry, but easy on other descriptions. Quotations vary according to character of the brand; some good Irons are available at \$18.25 @ \$18.50 at tide for No. 1 Foundry; others are firm at \$19 @ \$19.50, and in one or two cases special brands are held at \$20. No. 2 it is difficult to place large lots at unchanged, and probably will be until some of the accumulations of the past month or six weeks have been worked off. Gooderal of 500 tons each, some of 1000 tons each and numerous smaller lots. Prices realized have been about \$15.75 at tide for a fair quality of Gray Forge; others at \$16, and for what are considered as better qualities \$16.25 is asked, but as a rule \$15.25 @ \$15.50 at furnace are the asking prices. But the feeling is unquestionably becoming more confident, and, with prospects of a very heavy consumption during the balance of the year, there is little risk in saying that in all probability bottom prices have been reached, and a slight upward turn is only a question of time. Southern Irons are not offered in this market at present, although bids of \$15.50, ex-ship, for Gray Forge would not be likely to go far before meeting with a seller, but at less than that holders are evidently not anxious for business. A large number of local furnaces are running on Bessemer from Foreign Ore, which, for the time being, completely shuts out imports of Foreign Pig.

Foreign Irons.-There is considerable inquiry for Bessemer, but prices quoted so far are rather above buyers' ideas. At concessions of about 50¢ ? ton large lots of both Bessemer and Spiegel would be taken, but holders are very firm. Special brands Bessemer held at \$19.50 @ \$19.75; others at for 20 % and \$22 for 10 @ 12 %. Large lots of all kinds are under negotiation.

Steel Blooms.—There is a considerable inquiry for Rail Blooms, and a good many thousand tons of Foreign have been taken at mand at about the following figures: Slabs for Nail Plate, \$28.50 @ \$29.50 at tide for Foreign and \$30 at mill for Domestic, and from that to \$35 for higher qualities; special grades for Boiler Plates and other uses requiring high tensile strength, \$34 @ \$38. Other Blooms, & ton of 2464 lb, as follows : Charcoal, \$52 @ \$54; Run-out Anthracite, \$43 @ \$44; Scrap Blooms, \$33 @ \$34, and Ore Blooms, \$34 @

Muck Bars .- No change in prices. The demand is fair, with sales at \$28 @ \$28.50, according to quality and delivery.

Bar Iren .- The only feature of interest is the termination of the strike, the manu- port. same as it has been for some time, the mills facturers having agreed to the demands of ground that there will be a good fall trade, consideration, it is probably the best that goods will commence to come forward pretty We reasonable to expect Philadelphia to fight the at present why these expectations should not are unable to accept additional contracts for

results of the Philadelphia strike. Under men here for carrying Southern Pig Iron from \$17 @ \$18, net ton; Wrought Turnings, \$13 the market also for Foreign Blooms to be used these circumstances it is not surprising that the furnaces South to this market at a much in rolling a 2000-ton lot of light Rails for a the men have been successful. There is less freight rate relatively than is charged Borings, \$11, gross; Old Car Wheels, \$15.50 Southern road. The usual quotation for nothing in the demand to change the position home furnaces. It is said that Pig Iron is @ \$16, gross. taken by the mill owners, but the presumption is that, as cost will be increased in the country as well as in the city, prices will be advanced in proportion, so that practically they will be situated just about as they were before the strike, unless Pittsburgh carries off the lion's share. Meanwhile Skelp orders will be very helpful, but there is nothing encouraging in the outlook for Bar Iron. There is more demand than there has been for some time, carbuilders being in the market for large lots, but at prices which will probably preclude all chance of Philadelphia mills taking any portion of the orders. Prices are nominally 1.8¢ @ 1.85¢ for Best Refined Iron, but some of the mill owners say they cannot get orders at any such figures, and will probably not start up until they see what prices are really going

Plate and Tank Iron.—There is more inquiry for Plates, and for the time being mills are comfortably off for orders. Prospects are considered favorable, too, and the chances are that there will be a full average demand at slightly better prices. A fair amount of business has been taken during the week, and while prices are not quotably higher sellers have had the advantage in recent transactions. Quotations are about as follows: Ordinary Plate, 2.05¢ @ 2.1¢, delivered; Tank, 2.1¢ @ 2.2¢; Shell, 2.5¢; Flange, 3.5#; Fire-Box, 4.25#; Steel Plates. Shell, 3.25¢; Flange, 3.5¢; Fire-Box, 4¢.

Structural Iron .- A slow, but gradual improvement in demand is reported, al though as yet it has been chiefly confined to small lots. There are some important orders pending, however, and mills will undoubtedly have all they can do during the balance of the year. Prices have not improved to any extent as yet, but there is a healthy and firm tone to the market, indicating better rates on any material increase in the demand. Sales at about the following prices: 2¢ @ 2.05¢, delivered, for Angles; 2.1¢ @ 2.2¢ for Bridge Plate; 2.4¢ @ 2.5¢ for Tees, and 3¢ for Beams and Channels.

Sheet Iron.-No special change to notice; the demand is a trifle better, but still somewhat irregular. The tendency is toward improvement, however, both as regards price and demand. Small lots are

quoted about as follows: Best Refined, Nos. 26, 27 and 28.

Best Refined, Nos. 18 to 25.

Common, 146 less than the above.

Best Bloom Sheets, Nos. 28 to 28.

44 @
Best Bloom Sheets, Nos. 22 to 25.

44 @
Best Bloom Sheets, Nos. 28 to 21.

45 @

Steel Rails.-There is no change to report; mills are all full of work, with plenty of additional business in sight. Prices are unchanged, \$35 at mill being the usual quetation, with some little concession on lots for winter and spring delivery. Foreign Rails are offered at about \$37, c.i.f., with some probability of sales for delivery in the South and West, because of the difficulty the home mills will have to supply them in time, Sales have not been of much importance during the past few days, but there is plenty of business around; the difficulty is to handle it so as to meet buyers' requirements as promptly as desired.

Old Rails .- Nothing doing in Spot Lots. hipments are held subject to bids of about \$19.50 for T's, but there is very little demend. Lots at interior points command from \$20.50 to \$21 for good quality of Rails; ame figures asked for lots in store here.

Scrap Iron .- A fair demand is reported, but prices are somewhat irregular, and in most cases about as follows : No. 1 Wrought Scrap, \$18; Selected do., \$19 @ \$20; No. 2 do., \$13 @ \$14; Turnings, \$14 @ \$14.50; Old Car Wheels, \$15 @ \$16; Old Steel Rails, \$18.50 @ \$20; Fish Plates, \$23.50 @ \$24; Cast Scrap, \$14 @ \$15: do. Turnings, \$10 @ \$10.50. A cargo of about 300 tons Fish Plates sold at \$24.25, f.o.b. cars Jersey City.

new to report except a scarcity in large sizes, with a good demand. Prices are held \$24.50@\$25, c.i.f., with prospects of further firm and unchanged. Discounts as follows: business at about \$25. Higher grades in de- Lap-Welded Black, 571/2 %; Butt-Welded Black, 42½ %; Butt-Welded Galvanized, 32½ %; Lap-Welded Galvanized, 40 %; Boiler Tubes, 521/4 %.

Nails .- The demand still continues quite brisk, while the general outlook seems to be improving. The impression seems to prevail that higher prices are probable in course of a few weeks. Prices are quoted at \$2.20, firm, for lots from store.

Pittsburgh.

Office of The Iron Age, 77 Fourth Avenue, Privanue, PA., July 27, 1886.

There has been no important change in the general business situation since our last re-The feeling is steadily gaining converter capacity has bought a round lot of they (the country mills) are to abide by the railroads are criticized severely by furnace- prices unchanged. No. 1 Wrought Scrap, figures would not be accepted on all num-

being carried from Alabama and Georgia to Pittsburgh, a distance between 800 and 900 miles, for a little over \$4 \$2 ton, whereas furnacemen in the Shenago and Mahoning valleys, a distance of about 75 miles, are charged 80¢ \$\text{P}\$ ton from there to Pittsburgh, and the rate on Ore from Cleveland to Pittsburgh is \$1.50 P ton. Unless this matter is corrected in some way the railroads may look out for breakers. Furnacemen ask no favors; all they want is simple justice, and to this they are entitled. There is no disposition on their part to shut Southern Irons out of this market: all they want is an equalization in freight rates, and then, if the former can successfully compete with them in this market, all right.

Pig Iron.-There is a fair degree of ac tivity, but the market is in an upsatisfactory and unsettled condition. The demand is chiefly for small lots, consumers generally refusing to anticipate future wants, notwithstanding current prices but little, if any, more than cover actual cost of production. Within a few weeks there has been a decline of fully 50¢ \$\text{\$\pi\$ ton.} We can report sales of some 2000 tons standard Forge Irons at \$15 50, cash, against sales of same Irons not long since at \$16, cash. Southern Forge Irons, it is said, are being offered at from 50¢ to 75¢ P ton below the price of home made, but consumers generally prefer to pay the difference for the latter. We repeat former quotations :

No. 1 Neutral Mill	4	mos.
No. 2 Neutral Mill 15,50 @	15,75, 4	6.6
All-Ore Mill 16.75 @	17,00, 4	0.0
No. 1 Foundry 17.50 @	18,00, 4	6.5
No. 2 Foundry 16.75 @	17,00, 4	+6
All-Ore Foundry 18.50 @	19,00, 4	44
Charcoal Foundry 20,00 @	24.00, 4	46
Cold Blast Charcoal	27.00, 4	116
Bessemer Iron 18.50 @	4	0.5
The last sale of Bessemer Iron re	norted	WAR

at \$18.50, four months, but it is said to have peen offered at \$17.75, cash, and intimations are thrown out that a bid of \$17.50, cash would be considered. There appears to be no demand for the article at present.

Muck Bar .- We continue to quote at \$27 @ \$27.50, cash, and we can report sales at both of the prices quoted, although \$27.50, cash, is an extreme quotation, and can only be realized for a first-quality article.

Manufactured Iron.—Trade continues good for this month; mills are nearly all in operation, some of them working full, and the outlook for a good fall trade is very promising. Indeed, the indications are that business from now on until the close of the year will be better than during the same time for some years, as the reports from nearly all sections of the West and South are of a most favorable character. It is expected that orders from Agricultural-Implement makers will commence to come forward within a week or two. Mills making a specialty of Skelp continue to have about all they can do; some of them are working on it exclusively. Prices remain unchanged.

Nails.-There is a fair business for this nonth, and the indications are that August will show a continued improvement. Manufacturers as yet are not in condition to do much, having no assorted stock, but it is expected that they will be by the time the fall trade opens up. No change in prices' Iron Nails, \$1.90, 60 days, 2 % off for cash in carlots and upward, and Steel Nails, 10¢ @ 15¢ % keg additional. All the factories here are in operation excepting those of Zug & Co. and Moorhead Bros., and it is expected that the former will start up shortly.

Wrought-Iron Pipe. - The regular monthly meeting of the association took place in this city on the 20th inst., but there was nothing done of any importance to the general public; no change in prices, which are firm at combination rates. The next regular meeting takes place in New York. Discount on Black Butt-Welded Pipe, in carlots, 45 %; Galvanized do., 35 %; Black Lap-Welded, 60 %; Galvanized do., 421/2 %.

Steel.-There has been but little change in the general position of the Merchant Steel trade recently. Demand fairly good. but prices are not satisfactory, and in this latter respect there is not much prospect of an early improvement. Standard brands Refined Cast Tool Steel, 8# @ 9#; Crucible Machinery, 34 @ 4#; Open-Hearth do., 21/2 # @ 21/4; Boiler Plate, 4# @ 41/2 #.

Old Rails .- Old Iron Rails firm and higher. Sales have been made since our last report at \$22, delivered at Youngstown, and this may now be regarded as the ruling price. The demand here is chiefly for small lots, large consumers being pretty well stocked. Old Steel Rails, in absence of sales, quoted nominally at \$20 @ \$20.50 for short and \$22 @ \$22.50 for long lengths.

Railway Track Supplies .- There is a fair demand; no change in prices. Spikes, 40¢, 30 days, delivered; Splice Bars, 1.65¢ @ 1.75¢; Track Bolts, 2.75¢, with Square and 2.85¢ @ 3¢ with Hexagon Nuts.

Steel Rails .- There is still considerable said, are sold up until the close of the year. We repeat former quotations, \$36 @ \$36.50,

@ \$14; Old Car Axles, \$23 @ \$24; Cast

Chicago.

Office of The Iron Age, 36 and 38 Clark St., i Cor. Lake St., Chicago, July 26, 1886.

Hardware-Has assumed rather a quiet spect. Orders for the moment are for odds and ends for sorting up stocks. Prices continue steady, with renewed indications from manufacturers of staple lines that they will make a strong effort to obtain higher prices on fall trade. Short crops in some portions of the West, caused by the extreme heat and drought, are the first unfavorable feature respecting the large demand anticipated. Rains during the latter part of the week, however, in sections where badly needed will to some extent relieve the apprehension of failure in corn crops, and re-encourage the despondent croakers. Inquiries are already very numerous for prices and possible shipments on several lines of goods, and in some cases orders are entered for September and October delivery. Chicago job bers do not encourage this style of trade. and only accept such orders subject to price at time of shipment. We learn from traveling salesmen who have just returned from the Pacific Coast that the jobbing trade in that territory is exceedingly dull. During the low freight rates the majority of large retailers placed orders for goods with Eastern houses, and in many cases greatly in excess of their immediate wants. Job bers at the same time bought heavily from manufacturers, and the result is that both classes of dealers are chock-full of stock, with a very light demand from consumers. The retailers complain that their trade has been dull, and it will require all the cash that they can raise to pay Eastern bills, compelling them to leave their accounts unsettled with home jobbing houses, which is vigorously objected to by the latter, and places them in an unenviable position in meeting their liabilities. It is said that the country is overstocked with goods, and that it is almost impossible to sell sufficient to pay traveling expenses at the present time. The falling of the building occupied by the Simmons Hardware Company, St. Louis, created great consternation among the trade here, and general sympathy was expressed for the unfortunate calamity that has occurred to this enterprising house. The details of the accident are as yet too meager to give a definite statement of the damage, but from information at hand it looks as though there would be a heavy loss on the

Barb Wire .- There are no new points to note. The nominal quotation of 31/2 for Painted Wire and 41/4 for Galvanized by jobbers is made from store, but the price is openly cut to 3.35¢ and 4.10¢ in small lots to country dealers. There appears to be a decided weakness among manufacturers, with marked irregularity in price. There is at the moment no enthusiasm over the new organization under the name of the United Wire Company, but considerable secret work is in progress. As yet it is not thoroughly understood what the agreement of the new company will contain, and the majority of the prominent manufacturers are "holding their peace" and waiting develop-

Nails.-The conditions of the market are about the same as previously reported. From store in small lots Iron Nails are quoted at \$2.10 and Steel Nails at \$2.20, with 5¢ \$ keg off in carload lots. Since the announcement that Western mills have begun operations there is a great deal of complaining among heavy retailers and consumers regarding the quality of Eastern Nails. Western makers have not been running long enough to accumulate stocks of all sizes and cannot be said to be fairly in the market yet. Then, too, there are large jobbing houses who have the tail end of Eastern stocks on hand which they are desirous of ars Jersey City.

Wrought-fron Pipe.—There is nothing ew to report except a scarcity in large Drive-Pipe, \$1.30.

Boiler Tubes, 52½ %; 5½-inch Casing, 45¢ disposing of before buying Western makes. For both Iron and Steel Nails the demand is reported as a very good between-season reported as a very good between-season trade. Prices quoted are held quite firm and makers are not soliciting orders.

> American Pig Iron.-During the past week some of the heaviest buyers have been in the market. Negotiations which were under progress for 10 days previous for lots ranging from 1000 to 7000 tons were closed without disturbing the condition of the market to any noticeable degree. There is always great competition to get these large orders, and manufacturers who secure them have a basis upon which to rely for the disposal of the year's product. It is not to be understood that these orders will absorb all the Iron produced by the contracting furnaces, but that they consume the greater portion, so that they can be more independent on the price on which they sell the balance. They do, nevertheless, have an influence on the prices named for less quantities, and several orders for from 100 to 300 tons have been placed at a trifle lower figure than was expected a week ago. The tone of the market, however, is very strong. and no one apprehends that prices that have been made or will be made hereafter can undermine its present position. there are brands of Lake Superior Charcoal Iron on the market that cannot be bought for less than \$20.50 in carload lots, we quote average grades at \$19.50 @ \$20. These

Irons remains unchanged, though there are the jobbing trade. some dealers who say that they have no Iron have no trouble in disposing of their Iron and 60, 10 and 5 % off on Charcoal. during the fall, being therefore somewhat of competition and when a purchaser is has less stock to choose from than in either Coke or Charcoal Irons. The weakness that has characterized the grade of Southern Iron for some weeks past is still a prominent feature of the market. No. I Foundry is quoted at \$17.50; No. 2, \$16.50 @ \$16.75; No. 21/2, \$16; No. 3, \$15.50, in small lots. These Irons continue to be in bountiful supply, and sellers leave no stone unturned to obtain an order. Several heavy buyers are yet to be heard from, and the hope is entertained that when these have taken their supply for the year the market will assume greater strength and better prices will be obtained on the general run of trade.

Merchant Steel .- There has been only a light demand in a small way from store during the week. We learn, however, that several buyers have closed contracts for a year's supply at prices somewhat higher than what they paid last year. Very low contracts frequently incur unexpected losses, and the same house seldom duplicates an order of that kind. The harvesting machine makers are the heaviest buyers of this class of goods in the West and invariably place their orders at the bottom price. Those who had the orders last year placed their figures on the present specifications at a scale where they were pretty certain that, should they obtain the order, they would be able to make up some of the shortage on last year's business. As these points are fairly well understood by the trade, the placing of these large orders is having a good effect upon the market, though prices continue very irregular. As a nominal price we quote as follows: Tool Steel, 7½ @ 8¢; specials, 9¢ @ 13¢; Flat Crucible Machinery Steel, 41/4 @ 51/24, according to quality; Round Machinery, 234 \$\psi\$ @ 3\$; Open-Hearth and Bessemer, 232 \$\psi\$; Plow Steels, 5¢.

Steel Rails .- The Steel-makers of this locality are wholly content with the present situation. They have all the work they can possibly do for the next two or three months, and are receiving orders for small in price we continue the quotation of \$38 for first quality and \$34.50 for seconds.

Structural Iton. - A slight improvement is noted in the demand for Beams, Channels and other structural shapes. Improvements and extensions on several lines of railroads in the West have brought into the market new demand for bridge material. On the latter class of Iron prices are said to be quite firm, as mills are pretty well employed and months ahead. We quote Beams and Channels, combination price, 3.10¢; Angle Iron, 2.50¢.

Tank Iron .- There has been quite good demand recently for Tank material. both in Iron and Steel grades. Trade has been largely in small lots, on which we make the following quotations : C. H. No. I Flange, 4¢; Extra Flange and Flange Fire-Box. 41/2#; C. H. No. 1 Shell Iron, 5#; Tank Iron, 2.40¢; Tank Steel, 3¢; Boiler Tubes, 521/2 % discount.

that they are quoting higher rates better prices is a mere mockery, if transac- ahead of its capacity, a large lot of Washtions are a safe guide. From mill prices ifications we hear of these prices being

Black Sheets .- The demand for Black the orders they can well fill.

bers, and would vary in accordance with nary quality of Iron, which jobbers quote the quantity of Iron contracted for. Coke from store at 2.70¢ for No. 24, 2.80¢ for Irons have not fluctuated much lately, and Nos. 25 and 26, and 2.90¢ for No. 27. The the quotation of \$19 @ \$19.50 in carload better quality of Iron is in greater demand lots seems to be strictly adhered to. The in large lots and stronger in price. All nominal quotation of \$18 for Cinder Mixed manufacturers are asking higher prices from

Galvanized Iron.—The demand for Galthat they could sell at this figure. In the vanized Iron is very irregular. Jobbers re-Ohio standard Blackband Irons there is one port that they have had less trade during grade which is quoted at \$20.50, and it is the past week, and are apparently blue over said that no orders are accepted at less than the present condition of the market. Sales this figure. Other Irons of this class are agents report some increase in the demand quoted at \$19.50 @ \$20, carload lots, four from furnacemen and manufacturers of months. The demand has been very good goods for winter use. Jobbers continue and furnacemen feel certain that they will the quotation of 60 and 10 % off on Juniata,

Scrap Iron.—Dealers quote No. independent about accepting contracts for Wrought, \$17.50; No. 1 Mill, \$14.50; No. long-time delivery. The limited quantity of 2, \$9, and Cast Scrap, \$13.50, net ton. Blackband Ore that can be obtained places There appears to be an unusually good dethis grade of Iron somewhat out of the scale mand for the latter grade; sales of several round lots are reported. Other grades of looking for a strictly Blackband Ore Iren he | Scrap are taken only in small lots. Buyers are indifferent about placing orders.

Pig Lead .- A fairly good local demand has characterized the market during the past week. Sales aggregate some 400 tons spot, at 4.70¢ @ 4.75¢, August delivery. Prospects for large consumption of Lead Pipe and Sheets are reported good and a steady market predicted. Supplies are not abundant, but ample for all immediate wants.

Birmingham.

BIRMINGHAM, ALA., July 26, 1886. Last week was one of the busiest in Birmingham's history. It is probable, indeed, that the city never sold so many goods in six days before at any time of the year. An unusually brisk movement of real estate contributed to make the banks' business heavy, too. More capital is coming to Birmingham now for investment in ground in or near the city than ever before. A North Carolina syndicate and several Mississippians were among the largest buyers last week. The former paid \$400 an acre for poor land 4 miles from the city, with no minerals or other hidden possessions to give it value. Elsewhere in the State business, although not so brisk as in Birmingham, is at least more cheerful, and with good reason. According to the best accounts the crops still look very differently in different parts of the State, but undoubtedly their general condition is very much improved by the almost constant sunshine of the last two weeks. In certain districts now better than average fields of corn and cotton are prom-

Pig Iron.-Except for the fact that prices are still a little too low, the condition of the Pig-Iron market is all that manufacturers here could ask. The demand, which has been increasing steadily for several weeks now, enables them to clear their yards as fast as cars can be had, if they are willing to take market prices. Some are not much inclined to sell at prices now govlots that will likely fill up their works to the close of the year. There being no change cept to customers who prefer their product cept to customers who prefer their product to the point of paying even a fancy price for it. Buyers contracting here for future delivery would undoubtedly have to pay an advance on the present price. A good run of orders for from 1000 tons down is coming in, averaging about the same prices that governed a week ago.

Finished Iron.—It seems impossible to advance prices for Finished Iron. In spite of increased cost of materials and of very have in prospect sufficient work for several | much more satisfactory industrial conditions all over the country, movements for a better margin for manufacturers almost invariably meet with successful resistance. Trade must be dull somewhere else, for the mills here are continually encountering cuts for the business they are supplying. This, too, when the volume of their orders would lead to the conclusion that there is demand enough all over the country to give everybody plenty to do at satisfactory prices.

Miscellaneous.—With the small manu-filled direct from furnaces: factories and shops and foundries business is Bar Iron .- Jobbers of exclusively the about as good as it could be while best grades of Iron report that they are tion is so sharp everywhere. It is an unvery busy. Trade in the last week has lucky time for the shut-down of the Linn picked up remarkably well, and of course is Foundry, which continues, the management somewhat of a surprise, as they did not declining proposals of arbitration and standexpect much change for the better until ing upon their absolute right to select their next month at least. Inquiries for future labor. The arbitration move comes from delivery are much greater than immediate the Knights of Labor, but they have not yet shipments on large quantities. Small lots from done anything else publicly in the line of store on the best grades of Best Refined espousal of the molders' cause. The fortu-New Puddled Iron are quoted at 1.85¢ @ nate feature of the trouble is that the works 1.90¢ and in carload lots from mill at 1.70¢ are engaged mainly upon furnace materials @ 1.75\$. On Merchant Bars from Old- for their owners, the Pratt Coal and Iron Rail stock there is a great weakness Company, and delay to these will only prein price, though manufacturers claim vent as early a beginning as has been contemplated on their furnace. Another founthan some time ago. These statements are dry has an order from Philadelphia for some scarcely warranted on sales made from time 3 tons of small Castings to be delivered at to time, and all their attempts at getting New York, and has booked, several weeks ers, most of which are for railroad conare quoted at 1.60%, but on carbuilding struction in the West. A great deal of work is coming in from local sources, too, shaded tot, and it is not certain that they especially for mines and railroad grading do not make even lower figures. From store and street railroad extensions and improvejobbers quote 1.75¢ rates. The placing of a ments. The Stove works recently planted large number of orders by carbuilders in here by half-a-dozen Pennsylvanians are the last 10 days has given the market an doing well in a modest way. The Chain appearance of activity among manufact- works, which Birmingham also owes to Pennsylvania enterprise, continue to get all

under a 20,000-ton contract. This is about an average transaction for summer delivery between the largest producer and the largest consumer of this character of fuel in this part of the country. Other operators in the same line report fair demand. Several of the leading Domestic Coal concerns are still kept out of the market by delays of neces sary new machinery, and the trade, consequently, has hardly taken definite shape

Chattanooga.

Office of The Iron Age, Carter and Ninth Sts., CHATTANOOGA, July 26, 1886.

There is nothing to indicate any change in the general market, and matters are moving along about in the same manner that they have been for the past few weeks. As the season advances the weather becomes more favorable for the growing crops, which are now coming forward with better prospects. The manufactories report a good run of orders, and that the prospects are good for a full run during the remainder of the year. In making up their usual semi-yearly busiess some of them found themselves in a condition to declare dividends, which was done in amounts ranging from 5 % to 40 % on their capital stock for the first six months' business of the year. The Lumber business still continues good, and prices are remaining firm. The question of a number of new railroads is being discussed, and the probability is that some of them will be built in the early future, as there are many locations and important points which could be covered by lines that would be paying investments.

Pig Iron-Is still moving away from the furnaces about as fast as it is made; there are no stocks accumulating that are worthy of being classed as desirable grades. The truth is that prices are gradually stiffening up, although there are a great many people who deny it; some large round lots have been sold at prices at least 50¢ \$\mathcal{P}\$ ton higher than they could have been placed two months ago. There seems to be a disposition on the part of buyers, mostly consumers, to make their contracts now for what they will require for consumption for the next six or eight months. When large lots are sold, as they have been during the past week at prices for No 1 of \$14.50 @ \$14.90, net at the furnace, it is a very good indication of the state of the markets. The Southern foundries are taking their usual supply, but as a general thing they prefer to buy in small lots, ranging from carload to 100-ton lots. The Southern foundries are well supplied with orders, the character of their work being mostly machinery and repairs for the numerous manufacturers that are located in their vicinity; hence their demand for Pig Iron is generally quite regular.

Miscellaneous. - The Wrought - Pipe vorks located in this city are getting their machinery as fast as is practicable. They expect to be in operation early in the coming year. The Roan Iron Company are also pressing the work in remodeling the Old Rail mill into their new Steel plant, but it will probably be the beginning of the next year before they can commence blowing.

Cincinnati.

JULY 26, 1886.

Pig Iron.-Dealers report no new featares in the market further than that new inquiries from consumers for both immediate and future supply are met by prompt quotations and at prices that seem to be but little concession on former quotations, and for deliveries through this year, in some cases for deliveries extending into 1887. The general feeling in this great distributing center is that the demand for consumption at all points in the United States and Can ada will absorb the output of the furnaces in the West and South, and that present prices will obtain for all grades and for every use. Quotations for the past week, f.o.b. here or less freight to Cincinnati when orders are

mied direct from furnaces .			
Charcoal Foundry.			
Hanging Rock, Best, No. 1, 4 mos. 1 Hanging Rock, Good, No. 1, 4 mos. Hanging Rock, Good, No. 2, 4 mos. Southern No. 1, 4 mos. Southern No. 2, 4 mos.	\$21,00 \$0,00 18,00 17,50 16,50	800	19,00 18,50 17,50
Coke Foundry.			
Ohio and West Pennsylvania, No.			
1, 4 mos	18.00	0	20,00
8 d mos	17.00	0	18.00
bama and Georgia, No. 1, 4 mos. Southern—Virginia, Tennessee, Ala-	16.00	0	16.50
bama and Georgia, No. 2, 4 mos.	16.00		16,50
Close Foundry and Mill grades	14.00	0	15.00
Car-Wheel.			
Southern Warm-Blast Char'l, cash Southern Standard Warm-Blast	17.00	0	18.00
Charcoal, 4 mos	28,00	0	24.00
coal, 4 mos Hanging Rock, Cold-Blast Char-	19.00	0	20,00
coal, 4 mos	94.00		
Maryland and Virginia	27.00	@	29.00
Forge.			
Southern Coke, Neutral, cash	14.00		14.50
Southern Coke, Cold-Short, 4 mos. Southern Coke, low grades, cash	13.50		14.00 17.00
Scrap.	15.00	9	18.00
Rails	20,00		90.50
Wheels	16.50	0	17.00
100 fb	.50		.86
Cast, for range of grades, \$\mathbb{H}\$ 100 fb.	.35	0	.00
Customary discount, 40¢ @	50€	16	ton
for cash from time prices.			

Louisville.

in any one line of goods. Variously assorted orders of moderate dimensions see

to be the rule. Nails-Are moving freely and we have heard of some good sized speculative orders being placed. Stocks are understood to be light, and when wanted immediate shipment is always urged.

Wire. - Barb Wire is in greater demand The price, though, seems to be off, and bargains are as thick as stackers on the hog variety. Plain Wire is quiet and demand

Iron.—Stove-Pipe Iron is inquired for and a few orders placed, but there is no lively interest in the market manifested by the moderate buyer, at least.

In many lines ordinarily saleable there is an apathy from the unwillingness of the merchant to take hold lest his trade should increase their already too heavy accounts.
Until some of the indebtedness is paid off we do not look for lively times. The good crops hereabout will go a long way toward this end, but in the South and many hitherto prosperous sections we learn that the cotton is a complete failure.

St. Louis.

ROGERS, BROWN & Co., St. Louis, W. H. SHIELDS, manager, report, under date of July 26: A slow but steadily stiffening market has characterized the week in Pig Iron. Buying has been more active than at any time since last December. Furnace order-books are filling up rapidly, and a dis position is noted to advance figures a little with each new sale. The demand has come mainly from stove and car works, agricultural concerns and jobbing foundries. The feeling seems to be general that a good fall business is ahead, and that while railroad construction continues at the present rate prices will certainly be no lower. We quote

TOP Cast ;			١
Charcoal Foundry.			E
Missouri-None offering, nominally Southern	\$16.00 @	\$17.00 18.00	B
Coal and Coke Founds		40.00	F
Southern, No. 1	16.75 @ 16.25 @ 17.00 @	17.75 16.75 20.00	6
Mill Iron.	11.00 @	20.00	ľ
Missouri Southern	16.00 @ 14.25 @	16.50 15.75	G
Car-Wheel and Malleable	Irons.		
SouthernLake Superior	20.00 @ 21.00 @	25.00 23.00	E
Scrap, &c.			F
Old Wheels Connellsville Coke (Frick's)	15.75 @	16.25 5.65	-
			F

Detroit.

Charles Himrod & Co., dealers in Pig Iron, Detroit, Mich., report, under date of July 26, as follows: At no time during the present year, not excepting the large selling that occurred in January, has there been such a demand and such large purchasing of all grades of Metal as during the past week. These purchases consist of Metal both coming here and going from this market, and without doubt the tonnage balance is much in favor of Michigan production. The purchases by Harvesting Machinery men being made so far in advance this year of their usual custom have created quite a stir in the Lake Superior Charcoal-Iron market. Some of these men have not yet completed their purchases, and it is a query among producers where all of the stock is comin rom. Looking at statistics, they show that a large quantity of Charcoal Iron is in producers' hands, but it is a fact that should not be overlooked that the largest quantity of this stock might be called outside Iron, inasmuch as the furnaces holding the same have been doing so for some time past and have been doing so for some time past and are continuing to pile up their stocks, banking on the future. Keeping this fact in view, unless these people turn in and sell at this time it does not seem possible that the market can fail to advance. Already there is a lack of eagerness on the part of sellers, which causes present and propractive buyers. which causes present and prospective buyers some anxiety to close for what they require as quickly as possible. Southern Iron is low and irregular in price, and many con-tracts are sought for for a year's time, even at present prices. There can be no doubt now that the Lake Superior Charcoal men will lead in the advance when it shall take place. We should think the market fairly quotable to-day as follows:

Lake Superior Charcoal, all num- bers	\$21.50	20	\$22,50
Lake Superior Coke, All Ore	20.00	0	21.00
Lake Superior Coke, Cinder Mixed.	18,00	ā	19.00
Standard Ohio Blackband	20,00	a	21.00
Southern No. 2	17.00	a	17.50
Southern Silvery, Open	17.00	6	17.50
Southern Silvery, Close	16.50	ā	17.00
Jackson County, Ohio Silvery	18.00	ã	19.00
American Old fron Rails	20,00	6	21.00
Old Wheels	16.50	a.	17.50

Coal Market. The two events of the last few days in

the Anthracite Coal trade is the allotment for August as arranged about a week ago, and the announcement of an advance in prices of 15¢ @ 20¢ P ton as agreed upon on Thursday last at a meeting of the Coal trade managers in this city. The proposed advance was fully discussed, and a resolution was passed without dissent fixing the price of Stove at \$3.50 per ton in New York harbor, f.o.b., and Grate, Egg and Chestnut at \$3.15, to take effect immediately. From these prices a commission of 15¢ a ton will be given to contractors or wholesale dealers. The Pennsylvania Railroad Company was not represented, leaving it to be inferred that the position of this heavy producer is somewhat equivocal. As to the effect of the advance, little is expected to transpire before August, although some of the wholesale agents represent that there is a more conscientious regard for the circular and a general stiffening up. According to others, "dealers don't bite." It is admitted, however, by all Black Sheets.—The demand for Black
Sheets does not increase quite so rapidly as jobbers and makers anticipated. There is only a light trade in small_lots in the ording the control of the

stopped mining until August 1, and it is believed that the allotment of 2,500,000 tons for the coming month will be literally adhered to. At the same time it is to be borne in mind that mining and transporting ompanies have two sources of profit, so hat there may be a pecuniary inducement produce Coal even if sold at a loss.

New York harbor boatmen have organed to control prices for transportation, and it is said that they will make an advance August 1. Coastwise vessels are moving out more freely to Eastern ports, both from New York and Philadelphia.

The total amount of Anthracite mined thus far in the year 1886 is 15,931,879 tons, compared with 14,447,132 tons for the same period last year, an increase of 1,484,747 ons. The shipments from the mines of the Cumberland Coal region for the week were 73,516 tons, and for the year to date 961,031 tons, a decrease of 478,773 tons as compared with the corresponding period of

Bituminous is very quiet at \$3.15 @ \$3.25

Imports.

The following were the Imports of Hardvare, Iron, Steel and Metals into the Port of New York for the week ending July 28, 1886:

Hardware.	Crossmond L. D. & Co.
loker Hermann & Co.	Cast iron, pce., 1
Cutlery, cs., 14	Pain H.
Arms, cs., 9	Tubes, 12
Dieckerhoff, Raffloer &	Perkins C. L.
Co.	Spiegel, tons, 400
Case, 1	Rail ends, 468
Dolge Alfred,	Ferromanganese,
Mdse., cs., 3	Stetson Geo. W. & Co.
Downing R. F. & Co.	Pig. tons, 400
Cases, 7	Williamson Jas. & Co.
Drexel, Morgan & Co.	Pig, tons, 200
Arms, cs., 8 field Alfred & Co.	Order.
Mdse., cs., 22	Pig, tons, 559
Colsom H. & D.	Ore, tons, 750
Arms, cs., 17	Silico spiegel, tons,
lodfrey J.	29
Arms, cs., 4	Rods, bdls., 3631
lerdan Otto,	Castings, case, 1
Bundles, 216	Wire rods, bdls., 54
Bales, 12	Pig, lot, 1
raef Cutlery Co.	Crop ends, tons, 2001
Chains, &c.,pkgs.,18	Spiegel, tons, 210
Mdse., cs., 7	Spiegel, kg., 254,000
lartley & Graham,	
Mdse., cs., 3	Steel.
Arms, cs., 8	
Iensheimer L.	Abbott Jere & Co.
Machs., parts,pkgs.,	Billets, 245
10	Baring Bros. & Co.

Abbott Jere & Co.
Billets, 245
Baring Bros. & Co.
Rods, bdls., 3844
Downing R. F. & Co.
Slabs, 250
Cary & Moen,
Casks, 12
Heyn Alf.
Rods, pkgs., 213
Plock & Co.
Flat steel,pkgs., 8399
Power C. W.
Cases, 12
Wagner W. F.
Packages, 184
Order,
Sheets, cs., 4
Billets, 561
Forgings; 12 Hemely H. A.
Old mach'y, case, 1
Hoe R. & Co.
Mdse, cs., 2
James Emil,
Sew. machs., pkgs.
37
Kastor A sew. machs., pkgs

Kastor A.
Cutlery, cs., 3
Lalance & Grosjean
Mg, Co.
Cases, 2
McCoy & Sanders.
Chains, &c., pkgs.,
Mer. Disp. Co.
Cutlery, cs., 3
Rotterdam S. S. Co.
Ars, cs., 31
Sala, Hoheb & Co.
Mach'y, box, 1
Schoverling, Daly &
Gales,
Mdse., cs., 46
Shulte Wm. & Co
Cases, 12
Sheldon Geo. W. & Co.
Cases, 11
Singer Sewing Machine
Co.
Machines cs., 34 Forgings; 12 Bands, 26

Metais.

Alexandre F. & Sona,
Quicksilver, flasks,
800
Bruce & Cook,
Tin plates, bxs., 531
Black pits., bxs., 159
Bloomfield J. C. & Co.
Copper rollers, cs., 3
Central Stamping Co.
Tin plates, bxs., 1422
DeMit H. R. & Co.
Tin plates, bxs., 535
Drexel & Co.
Tin plates, bxs., 414
Erie & G. W. Disp.
Tin plates, bxs., 414
Erie & G. W. Disp.
Tin plates, bxs., 1585
Frazer J. A.
Type metal, ingots,
2100
Mersick C. S. & Co.
Tin plates, bxs., 550
Montell F. I. & Son,
Old brass, pkgs., 5
Old metal, bbls., 3
Paulsen W.
Tin plates, bxs., 6
Peleps, Dodge & Co.
Tin plates, bxs., 6
Peleps, Dodge & Co.
Tin plates, bxs., 6
Peleps, Dodge & Co.
Pierson C. L.
Sheathing, cs., 40 Metals. Strauss, Blumenthal & Co. Cases, 8 Mosher, Wheyland & Co. Case, 1 Wittemore Bros. Machines, parts, cs. Baring Bros. & Co.
Rods, bdls., 2759
Wire rods, coils, 1033
Bars, 796
Ore, kg., 350,000
Crocker Bros.
Fig. tons, 707
Ferro iron, tons, 285 Pierson C. L. Sheathing, cs., 40 Sheathing, ca., Order, Tin plts.. bxs., 30,864 Zinc oxide, bbls., 100 Tin, ingots, 700 Plumbago, bbls., 92

The imports of Cutlery, Hardware and Metals at this port, during the week ending July 23, were as follows:

Witte John G. & Bro.

Needles, case, 1 Cutlery, cs., 11 Guns, cs., 3

Guns, cs., 6 Order, Mach'y, cs., 72 Mach'y, crates, 5 Guns, cs., 4 Files, csks., 4 Packages, 12

Iron

	Quantity.	varue.
Anvils	185	\$1.018
Brass goods	85	2,704
Bronzes	20	1,086
Chain and anchors		2,308
Clocks		3,569
Copper		506
Cutlery		87,208
Dutch metal		2,071
Electrotypes	18	382
Guns	150	18,685
Hardware	9	1,804
Iron, pig, tons	2,063	22,214
Iron, sheet, tons	24	1,490
Iron, spiegel, tons	1,883	22,519
Iron, tubes	106	700
Iron, other, tons	1,083	85,016
Lead, pigs	1,570	6,264
Machinery		15,873
Metal goods		27,604
Needles		4,720
Nickel		4,842
Old metal		8,048
Patina		18,143
Plated-ware	27	1,214
Percussion caps	19	1,278
Plumbago	80	18
Saddlery	10	910
Steel	68,068	76,170
Tin, bxs	45,637	173,399
Tin, 2188 slabs	191,745	42,270
a seed water more and	AMOUNT.	0.005

At one of the last meetings of the Society of German Engineers, in Stettin, attention was drawn to the centennial jubilee of the was drawn to the centennial points of the starting of the first steam engine in the Mansfelder Gewerkschaft, the 25th of August, 1785. It is said that even before this an engine had been running in Dassel, and in 1736 one in Saarbrücken. The Mansfeld engine, however, we understand, was the first ever built in Germany by German workmen, of German material, and without any foreign assistance. The building of this engine is said to have taken sev-

Trade Report.

General Hardware.

There is absolutely no change since our last in the general situation, except that another week has gone by and the time of general activity is so much nearer. Travelers are resuming their labors, and the season's work will soon be fairly begun.

The New York Nail market is dull and quiet; many buyers have pretty well covered their requirements for the near future at low prices, while others are holding off awaiting developments. Manufacturers' agents maintain a firm attitude, and we hear of only occasional cutting by second hands, without that being any feature of importance in the market. We quote \$2 10 for carload lots and \$2.20 from store, with an advance of 10 to 15 cents for Steel Nails.

The failure of the Bridgewater Iron Company, a very old Nail manufacturing concern, was announced last week. The Boston Herald says: "It is fully believed that, if assured a sufficient time, the company will be enabled to liquidate its indebtedness in full, and leave its plant at Bridgewater intact, upon which to found a new com

The Cobb's Iron and Nail Company, Aurora, Ind., under date of the 21st, quote Square Cut Iron Nails or Wheeling cut \$1.85, f.o.b. Aurora.

As we write a meeting of the Screw manufacturer is in session, but no reports of their action have reached us.

The prices in the circular of Merchant & Co., which we printed last week, were erroneous on Sheathing Copper, and the following correction has been issued

Sheathing Copper,-14 x 48.

16 oz. to sq. ft. and heavier, per lt 14 oz. and up to 16 oz., per lb 12 oz. and up to 14 oz., per lb	18	Cold Rolled. \$0.18 .19 .20
---	----	---

The Alford & Berkele Company, having been re-appointed agents for the Shot Gun Shells made by the American Buckle and Cartridge Company, quote the following prices. They say: "These goods, having been much improved in quality, are equal to any in the market, and we offer them at lower than the combination prices.

Paper Shells.

Diamond Grade.
No. 10, 3% and 2% inches only \$12.00 No. 12, 2% inches only 11.00 Discount 50&10&5&2 \$.
Second Quality Waterproof White Paper Shot Shells.
No. 10, 2% and 2% inches only \$9.00 No. 12, 3% inches only 8.00 Discount 40&5&5&2 s.
Second Quality White Paper Shot Shells, Regular Per 1000.
No. 10, 2% and 2% inches only
Brass Shells.
Brass Shot Shells, First Quality.
No. 10, 2% and 2% inches Per 100. No. 12, 2% inches \$10.00 Discount 50&10&2 \$5.
Brass Shot Shells, X Quality.
Per 100,

The manufacturers of Wrought-Iron Pipe held a meeting in Pittsburgh last week, but adjourned without making public any changes in prices. At the close a member said to the reporter of a local paper: "We had a discussion on trade, and found that the demand is in excess of the supply. It is with considerable difficulty that a sufficient quantity is obtained for filling pressing orders. The volume of business is greater than at this time last year, owing to the large number of natural-gas mains being put down. There was no advance made in prices, but some slight alterations were found necessary."

Discount 65&10&5&2 ‡.

Changes in the price of Rope have been requent during the past few weeks. Two have occurred since our last. On the 21st Sisal advanced 1/2 cent per pound, making 1 1/4-inch and upward 10 cents per pound. On the 23d inst. Manila advanced 1/2 cent per pound, making 11/4-inch and upward 13 cents per pound, and on the 27th Sisal advanced another 1/2 cent, making 1 1/2-inch and upward 10 1/2 cents per pound. The following are the present rates, subject to the usual trade allowance:

Manila Corde

Cts. pe	er lb.
114-inch cir. and upward, and Hay Bope 12 thread, or %-inch diameter	1816
6 and 9 thread, or 4 and 5-16 diameter	14
Bolt Rope Yarns Whale Line	1436
Tarred	1234
Sisal Cordage.	/-
114 sinch cir. and upward, and Hay Rope 42 thread, or 34 inch diameter 6 and 9 thread, or 14 and 5-16 diameter	1056 11 1136
Tarred	10
The Athel Machine Company inform	us

that the trade price on American Meat and Vogetable Choppers and Starrett's Domestic Presses will be advanced on the 1st of August to discount 30 per cent

The Nason Mig. Company, 71 Beekman street, New York, announce, under date of the 16th inst., the following advance rates on Fittings for Wrought-Iron Pipe:

Iding of L. granton														
Cast Iron Fittings Bushings and Plugs		,		,	'n		ñ	1	,	-	1		.71	1
Malleable Iron Unions.												ò	89	

The July issue of the Blue Book of t John W. Ealy Company merits espec From its first appearance this wo notice. has been steadily improved, and has be much enlarged since the January revision The number of names given shows an i crease of more than 50,000 since the last ed tion. It covers the Hardware and allied trad of the United States and Canada, and in th work the co-operation of 40,000 special corre pondents is claimed. We also notice an i provement in the classification and arrang ment. It gives the names, addresses and cree ratings of 350,000 dealers in Hardwar Iron, Agricultural Implements, Machinist Blacksmiths, Wagon and Carriage Maker Eugine and Boiler Makers, Plumbers, Stea and Gas Fitters, Iron, Brass and Met Workers, Mill Supplies, Stoves, Cutler Guns, Jewelry, General Stores, &c. In a dition to the above-mentioned lines of trace it contains the names, with ratings, of manufacturers and dealers in other branch of business who deal in or use anything co nected with Hardware, Iron, Metals, M chinery, &c. In mechanical execution th book is admirable, and reflects credit upo the enterprise of the publishers.

Under date of the 20th inst. the La Be Iron Works, Wheeling, W. Va., issue t following circular :

To the Trade: After a protracted strugle of nearly 14 months the skilled workmen in our employ prior to June 1, 1885, ha recognized the justness of our claims for reduction in wages, and on Saturday, 17/inst., we succeeded in making such mutual satisfactory arrangements with them as he ended the long strike in our establishmen By these arrangements we have been ended the long strike in our establishmen arrangements. By these arrangements we have been en abled to secure the services of those when have largely contributed to the excellence of our celebrated brand of Nails in the past. They, in conjunction with those we have educated during the past year and whom we still retain, will enable us to fully operate our establishment, the capacity of which we have largely increased. We must thank you for your indulgence during the continuation of our trouble, and now hope to ship your orders promptly and at satisfactory prices.

We make the following extract from a cicular of Wm. Blair & Co., Chicago, dated th

The amount of business in General Hard ware for the first half of this year exceed the sales of the same period of 1885. Shor crops in some sections may affect local deal ers, but the outlook for fall trade is very encouraging for Chicago. Staple goods seem to have touched bottom, and are quite firm at present quotations. Some lines of goods, notably some of Sargent's goods, Carriage notably some of Sargent's goods, Carriage Bolts, Socket Chisels, Dripping Pans and Wire Nails, have advanced about 10 per cent. Shot has advanced 35 cents this month. There is considerable inquiry at present for fall goods, such as Sheet Iron Coal Hods, Stove Boards, Elbows, &c., for future delivery. We see no advantage in this to either buyer or seller, and shall not take orders of this character, but will make low prices for immediate delivery to parties low prices for immediate delivery to parties who wish to buy now. Orders placed for future delivery should be guaranteed to date of shipment, and in such cases we would be glad to make prices before the goods are delivered. Our prices will be the bottom of the market. Cartridges.—Not being in the combination we make our own prices, and combination, we make our own prices, and will be happy to make special quotations to our customers and supply their actual wants, s heretofore.

We invite the attention of the trade to the announcement, to be found among our Special Notices, of an important sale of Table Cutlery direct from the manufacturers, on Tuesday and Wednesday, August 10 and 11; Haydock & Bissell, auctioneers.

J. Richard Clancy, Syracuse, N. Y., issues a neat little illustrated catalogue and price list of Theatrical Stage Hardware, a specialty of which we are sure many of our readers have never heard. The following s the introductory circular :

Special to Managers and Stage Carpenters : I commence the second year of my busi-ness with this new illustrated catalogue, comprising the only complete line of regular goods and novelties in Theatrical Stage Hardware in the United States. In calling your attention to the following net prices of Theatrical Stage Hardware, I deem it essential at this time to make a few words of explanation. I am not, as rivals have reported, selling goods at or below cost. On the contrary, I give all notice that I am making a fair living profit on all goods that I manufacture. It is true it is a very small margin of profit, but it is satisfactory in times like these. I am confident that all wish to know where they can buy first-class goods at the very lowest prices, and that a careful perusal of the following pages will show you. Our prices are like the laws of the Medes and Persians, unalterable until further notice. with no deviation under any circumstances, with no inside track for anybody, but the same prices to one and all. Members of the amusements profession are respectfully invited to make our office their headquarters while in the city. Desks and stationery are while in the city. Deal provided for their use.

The following is the discount sheet No. 6 of the Reading Hardware Company, dated July 15, subject, of course, to their regular

0	July 15, subject, of course, to their regular	198-199, Jail Padlocks
nd	catta discouges.	201-206, Barn Door Hangers
tic		204, Barn Door Rollers 204, Barn Door Pulis
n-	78 Champion. Advance. Model. Per. doz \$9.60 11.15 6.35 5.60 76 Gem '73	206, Barn Door Rail and Hay Fork Hooks 206-207, Hay Fork Pulleys
ADB 1	8.00 7.15 6.00 7. Nut Cracks 60 7. Coffee Mills 85 8-6, Tobacco Cutters, change list 50&5	200, Grindstone Fixtures 210, Shingling Hatchets 210, Bench Screws and Handles 211, Melting Ladles 211, Saw Clamps
ne.	Nos.	212, Screw Braces and Plumb Bobs. 212A, Braces, Hazeltine Plain, Nos. 68 to 72. 212A, Braces, Hazeltine Plated, Nos. 68 to 92. 212A, Braces, Chantrell Plain, Nos. 106 to 12. 212A, Braces, Chantrell Raichet, Nos. 138 to 1
4		

the	16-17, Bracket	s, Store Sh	elf, add	88
ial	Inch	***********	87 14 x 18 \$15.50 ge, Rosette	16 x 20
rk	Per dozen	pairs	\$15.50	18.00
en	18-20A, Brack	ets, Cottag	e, Rosette	800 Crown
n.	21-28, Bracket	s, Lamp an	d Flower Po	t*669
in-	25, Butts, Fast	Joint No. 1	4	
di- les	26-27, Butts, I	cose Joint,	Nos. 18, 20	and 22*662
his	21–28, Bracket 24, Butts, May 25, Butts, Fast 25, Butts, Fast 26–27, Butts, Loo	se Joint No.	24, change	8 = 914
08-	2 x 2 \$2.80	8.10	216 x 216 8.80	8.60
m-	8 x 8 3.80	316 x 3 4.25	81/6 x 81/6 4.50	4 x 336 5.00
go-	4 x	4 436 2	416 53	£ 8
dit	5.8 28-30, Butts, I 31, Butts, Loo 32, Butts, Lo Screws	0 6.	90 Y:	80 and 38*668
re,	81, Butts, Loo	se Pin Nos.	85 and 38	75&1
ts, rs,	Screws	ome Joint	No. 25, COU	*6
ım,	32B, Butts, Lo	ose Joint N	o. 44	75&1
tal	88, Butts, Loo	se Joint No	s. 45 and 47.	
ry,	85, Butts, Loo	se Pin Nos.	36 and 87	75&1
ıd-	86, Butts, Loos 86B, Butts, Lo	se Pin Nos.	41, 48 and 89	
de	36B, Butts, Lo	ose Pin Nos	. 53 and 58 Non. 56 and 5	7700
all	32, Butki, Lo Screws	e Pin Nos.	52 and 54	49 00 and
nes m-	39, Butts, Bros 40-40A, Butts, 78	Bronke Me	tim NOS. OI,	60&73
la-	39, Butts, Bron 40-40A, Butts,	Bronze Me	os. 62 and 64 etal Nos. 72,	74, 76 and
he	78 Brow	we Wetal N	os. 78 and 75	608:74
on	78 41. Butts, Broi 42, 42A, 48, Bu	tts, Plain Br	onze Nos. 6	r, 69, 77 and
	79 44-45, Butts, In	side Shutte	F	6
lle	46, Hinges, Gr.	rface Blind.		
he	44-45, Butts, 11 46, Hinges, Gr. 46, Hinges, Su. 47, Hinges, Lu. 48, Hinges, Lu. 48, Hinges, Bii. 48-50, Hinges, and State 50B-51, Gate L.	rbster's Shi	r's, Extra H	esvy7
	48, Hinges, Bii	nd Door	item New	England
ıg-	and State 50B-51, Gate L 51, Gate Latch 52, Shutter Cat	Charles Was	910 to 000	
en ve	51, Gate Latch	es, Nos 11 to	28	11 8
a	52, Shutter Cat 52, Shutter and	Blind Fast	eners	
th	53, Turnbuckle	in Imper in	d B. K. Bar	rel
lly as	51, Gate Latch 52, Shutter Cat 52, Shutter an 53, Turnbückle 54, Bolta, Tow 54B-55, 56, Bo Melal, Nos. 7 56, Bolts, Barr 56, Bolts, Barr 58, Bolts, Flat 59, Bolt Staple 60, Bolta, Squ Japanned 60, Bolta, Squ Japanned 60, Bolta, Squ	its, Barrel,	Bronzed, a	nd Bronze
ıt.	56, Bolts, Barry	el, Bronze	letal Nos. 18	08 to 180550
n-	56, Bolts, Barre 57, Bolts, Barre	el, Brass		60
ho of	58, Bolts, Flat	and Cased S	hutter	ter50
t.	50, Bolts, Flat	Ship, Brass	Dales	
ve	60, Bolts, Squ	are Spring	and Squar	e Necked,
te	Japanned 60, Bolts, Squ	are Spring	and Squar	e Necked,
ve	Brans, Nos & 60B-61, Bolts, S	000 to 8885		55
ık	60B-61, Bolts, S 61, Bolts, Squar	re Door Bra	NOS. 777 10	178055
u- ip	62, Bolts, Sprin	g Foot	*********	
ry	61. Bolts, Squa 62. Bolts, Sprin 62. Bolts, Level 63. Bolts, Chair 64. 69. Bolts, Chair 64. 69. Bolts, Chair	Japanned		68 id Foot 68
	64-69, Bolts, Sq	uare, Botto	m, Chain at	d Foot68
r-	Royal Bronge	tise Door,	add No. 81	······································
he	68, Bolts, Chair 68, Bolts, Chair 64-69, Bolts, Sq 70, Bolts, Mor Royal Bronse 70, Bolts, Mort 71-73, Bolts, F change list	lse Door No	s. 3985 to 396 zed and Bro	nge Metal.
	change list			00
d- ds	Nos	861 868 86	4 866 868 35 4.80 5.80	869 871
rt	24-75 Rolts 170	nah. Bronze	Metal	0.70 8.60
ıl-	74-75, Bolts, Fly 76-79, Bolts, Fly	ish, Bronze	Metal	

	\$8.50 8.95 4.35 4.80 5.80 6.75 8.65
	74-75, Bolts, Flush, Bronze Metal
	4110
	90-91, Cupboard Catches
	90-91, Cuppoard Catches
	92, 92A, 93, Cupboard Catches
	sour Catches
ı	94B, Transom Catches, Bronzed50
١	96-97, Cupboard Turns, change list, No. 431, \$3;
١	add No. 1435, \$12.50, Bronse Metal60
ı	98 Cuphoard Latches
ı	98, Cupboard Latches
	93. Screen Door Catches
	100-101 Thumb Latches
	102. Thumb Latches, Japanned
	103, Thumb Latches, Bronzed
1	104. Barn Door Latches
ı	105, Stoor Door Handles, Japanned
ı	106-109, Stoor Door Handles, change list, No.
ı	112, \$12; add. No. 1101/2 Albion, \$1060
١	110-111, Store Door Handles, Bronse Metal55
ı	112-118, Store Door Handles, Bronzed55
ı	114-117, Store Door Handles, Bronse Metal50
ı	118-120A, Store Door Handles, Bronze Metal60 120B. Bank Door Pulls, add No. 1164, \$2555
i	121-125, Door Pulls
ı	126-127, Letter Box Plates
ı	128-182, Drawer Pulis, list prices on page 183 are
Į	wold Control of Page 100 are
1	void
J	134. Flush Rings
١	134, Flush Rings
	184. Lifting Handles, Brass
1	185-187. Chest Handles and Trap Door Rings 65
J	188-140. Hooks, Wardrobe, Hat and Ceiling55
1	141-144, Hooks, Hat and Coat, change list 55
1	Nos940 942 945 947
1	Nos940 942 945 947 \$2,30 2.30 2.75 2.75
1	

Lifting Handles, Brass	so feet front on Washington avenue a
Nos940 942 945 947 82.30 2.30 2.75 2.75	150 feet. The building was erected about
	three years ago, and at the time of its co
-147, Hooks, Hat and Coat	pletion was said to be one of the most so
149, Hooks, School House, Baggage Cneck,	**
at Rack and Bars	
Hooks, Clothes Line	way took place in the north end of the bui
Hooks, Harness	ling and extended back about 60 feet from
Hooks, Molding	the northern wall. In the rear of that t
Hooks Tamp	
Hooks, Lamp	moors remained munchanding Wishin t
Hooks, Cabin Door	I Boom'y town or mercumous
156. Hooks, Bird Cage	space of 50 x 00 feet, nowever, the not
Pulleys, Side and Upright	gave way entirely. There was no sli
Pulleys, Ceiling	about it at all. It seemed as if the rafte
Pulleys, Ceiling	had all been sawed off close to the wal
158B. 159. Pulleys, Japanned Screw, In-	
need and Swivel	and that the crash was due more
	a settling of the foundations than t
Pulleys, Dumb Waiter 55	overweight of stock upon the floors. T
Pulleys, Clothes Line 60	concussion of the falling floors was
Pulleys, Hot House	
168A-178, Pulleys. Frame and Axle25	strong that the windows in the rear, 50 fe
Sliding Shutter Sheaves	from the edge of the great cave, were blov
Sliding Door Stops and Rail	out into the street, which was covered wi
Sliding Door Sheaves	shattered glass. Owing to the darkness ti
177, Sliding Door Hangers and Rail	
Organ Rollers 60	spectators could hardly form any idea of t
Organ Rollers	extent and character of the wreck, and the
Sash Cord Irons50	crowd did not remain upon the scene ver
Sash Locks and Props	long. When the front of the building wa
Window Springs and Bolt Sockets 60&10	
-179, Window Spring Bolts, add No. 12, 3%	examined by the aid of a calcium light
, \$5.75; No. 22, 394 in., \$7.15	was found that there were two very ug
-179, Window Spring Bolts, add No. 12, 334 , \$5.75; No. 22, 334 in., \$7.15	cracks in the north wall, at the windo
Stubs and Plates and Sash Centers, add No.	arches of the fourth story, and that the
82.75	was, moreover, a decidedly dangerous bulg
Knobs, Shutter, No. 15	
Knobs, Shutter and Ficture, Nos. 20 and 3000	in the walls at that point. When this we
Knobs, Drawer, No. 40	discovered ropes were put up on the lam
85, Sash Lifts	posts to prevent pedestrians passing on th
Rash Lifts Flush 55	sidewalk in front of the building, and o
Sash Lifts, Flush	
in Bronze58	either side of the structure the street can
Sash Pull Plates	discharged their passengers temporarily t
Sash Pull Hooks60	pass before the dangerous wall.
90B-191, Shutter Bars	Mr. Isaac N. Martin, vice-president an
Shutter Bars, Brass, Nos. 6470-6510	
97, Sash Fasteners60	manager of the company, arrived at the
194B, 194C, Sash Fasteners	wrecked store about 10.30 o'clock. He said
99. Jail Padlocks	"The building was supposed to be as stron
Barn Door Hangers Nos. 3 to 8 and 15 to 3230	as it is possible to erect any structure, an

wrecked store about 10.30 o'clock. He said ware, all in boxes, well sampled, of have about 600, all 12 inches deep and from 3 x 6 inches to 7½ x 24 inches. The top 70 wrecked store and 10 inches high and 8 and 12 inches long. The standards are all 4 feet apart and grooved every 3 inches for 1½ inches for 1½ inches for 1½ inches in hight fire, but can, of course, collect nothing on our policies. Such a catastrophe was never considered possible, or even thought of, and there are probably no companies who insure against losses of this kind. The destroyed property is a total loss."

"Can you give any estimate of what the amount will be ?"

	4	
5	213, Line Cleats	5
	918 Malleable-Iron Wrenches	•
	919 Wagon and Cart Royes	Э.
	214-215, Foot Scrapers)
	216. Porch Irons8	5
n	216, Well Wheels. 40 216, Hoisting Pulleys. 32)
R	216. Hoisting Pullevs3	5
2	217. Table Leaf Supports)
R	217. Table Leaf Supports	5
5	1 217. Quoits	н
Ž	917. Dumb Rells	71
2	218, Bed Fasts	3
0	219. Store Truck Casters	4
	220-221, Casters, Plate and French, revised list	-
	prices. 46 220-222, Casters, Plano Forte and Bed, revised	1
	220-222, Casters, Plano Forte and Bed, revised	d
	Hat prices	
	224-226A & B 227, new, Bell Levers and Lever	1
	Door Polls	ı I
6	Door Bells	ı
5		
	990 Slide Rell Pulls	il
5	229, Stide Bell Pulls	1
9		
5	\$8.60	и
0	\$8.60	ч
0	281. Bell Spikes and Check Springs, change list,	. [
9	No. 1, \$4,501; No. M. 20,001	
0	1999 Shada Brackets and Roller Ends	, ,
3	288, Window Shade Racks	П
2	233, Sectional Sash Weights	4
3	294 Store Shovels	ч
2	284, Waffle Irons	1
0	235, Stove Cover Lifters	1
Z	235, Spring Coal Tongs	4
٠,	236, Ice Picks and Egg Beaters	ч
6	236, Demon Squeezers	П
	237, Potato Mashers 15 237, Rubber Mops 30 297, Foot Rests and Boot Jacks 45	1
	997 Foot Rests and Boot Jacks	1
5	288 Tack Hammers	
5	28 Carnet Stretchers	1
5	238 Carpet Stretchers 60&5 238, Quilting Frame Clamps 55	1
S	1989 Noan Dishes	
1	240. Sad Iron Stands	1
1	240. Coffee Pot Stands 45	п
Н	241, Sad Irons 30	1
J	941. Polishing Irons	1
H	242, Toy Sad Irons and Stands	1
1		1
1	243, Saving Banks	1
1	244-246, Match Safes	1
1	247. Twine Boxes. 55 248-249, Paper File Hooks and Paper Clips. 30 250-255, Paper Files, Check Cancelers, Pen Racks, and Paper Weights. 30	1
1	oso oss Paper Files Check Cancelers Pen	I
1	Packs and Paper Weights Sanctiers, ren	1
1	956 963 Inkstande 8814	1
1	256-263, Inkstands	1
1	(Quoted by letter on application.)	1
- 11	(Ambien of tester on ablumentary)	

AN EXTRAORDINARY ACCIDENT

occurred last Sunday night in the collapse of the building used as a retail store by the Simmons Hardware Company, on Washington avenue, between Ninth and Tenth streets, St. Louis. We take the following particular from the Globe-Democrat!

A loud, sharp cracking and snapping startled the few pedestrians in the vicinity of Ninth and Washington avenue at about 3.20 o'clock last evening. Then there came a long, rumbling sound, and then a grand crash that shook the buildings for squares around. A dense cloud of smoke filled the street and hid the buildings from view. When the cloud of dust lifted and the fire department had responded to the alarm it. department had responded to the alarm it was seen that the floors had given way in the eastern half of the six-story building on Tenth and Washington avenue, occupied by the Simmons Hardware Company and the the Simmons Hardware Company and the Hamilton-Brown Shoe Company. The crash had taken place in the eastern half of the building, occupied by the first-named company as a storehouse, and the greater part of the miscellaneous stock that had burdened the five upper floors was had burdened the five upper floors was piled up, a heap of débris, in the first story and the cellar, and bulging out through the doors and windows on to the sidewalk. The roof in the center had gone down also.
There was no fire, and there was nothing for the firemen to do but to see that the gas which filled the air in the vicinity was turned off. The work of taking out the surned off. The work of taking out the stock was not begun, as it was packed and wedged down in the heap at the bottom in such a manner that means for removing it could not readily be devised in the dark. A great crowd gathered and tramped around in the street. Just how bad the accident was, and just what the cause was, could not be ascertained, but the sentiment on every side was, "Lucky it didn't fall yesterday or to-morrow, or there would have terday or to morrow, or there would have been lives lost."

> bout omring ildthe l a it

"I have no idea whatever, and nobody can have until we clear out the débris and learn what the salvage will amount to. This will be done immediately, and there

will be no interruption of business."

George W. Kimball, the buyer, took a seat in a chair in the office and mopped away the beads of presperation that stood on his forehead. It was about 10.30 o'clock, and he had just returned from a survey of the wreck.

"I have just made a complete survey of the catastsophe," he said, "and I find that the roof and six floors have been cut away as cleanly as if it had been done by carpen-

as cleanly as if it had been done by carpenters. Everything is gone. On the remaining portion the goods are still standing as nicely as if nothing had happened."

"Was the building heavily overloaded?"

"Oh, no. There was comparatively nothing in it—that is, nothing of weight. On the sixth floor were baby carriages, a few refrigerators and the gas stoves, which are very light. On the fifth we had the small wagons and bicycles. On the east side of the fourth were the shovels, on the west agricultural implements and in the center cases of guns. The third floor held the bins of piece tinware, shelves of hardware and cases of unpacked shelf goods. The second floor was the sample-room, and carried almost no weight. The first floor was the retail household goods department, and the basement contained duplicate stock for all departments. That is about the run of the departments. That is about the run of the house as near as it can be given at present. I am satisfied that the weight of the stock had nothing to do with the accident, and that it was due to the defective construction of the brilding. of the building.

What supports were there to the floors ! " "Wooden columns, capped with iron."

"Wooden columns, capped what from "What is your estimate of the loss ?"
"I can give none. I might approximate it if I knew what salvage there would be, but I do not know that regardless of the salvage. I should say about \$50,000." salvage. I should say about \$50,000.

"Oh, no. The business will continue as usual. There is one thing it will do, however—it will knock the dividend higher than a kite."

Mr. Kimball said that during business hours there are about 10 clerks on the first floor and three on the third, the other floors being run by the clerks on the corresponding floors in the other building, going back and forth, there being doubtless 25 or 30 in the building all the time. At the time of the accident the night watchman, Mr. Pullen, had just left it, and had not walked 100 feet away. Mr. Simmons was telegraphed to return from Oconomowoc

ARRANGEMENT OF HARDWARE STORES

The following communication from T. B. Rayl & Co., Detroit, Mich., alludes to their system of boxes or drawers, with a special reference to Auger Bits:

For sampling all small Tools and Shelf For sampling all small Tools and Shelf Hardware we use the wooden boxes or drawers, running them about three-fifths of the way from the ledge to the seiling. The space between shelving is 5½ inches, and the drawers are different widths to accommodate different articles. These drawers we face with bright green glazed paper, which keeps its color and does not take dirt readily. We find it nedessary to renew the paper We find it necessary to renew the paper and samples only about once in three years, and we have never seen anything else that compares in appearance with this system. For keeping our retail stock of Auger Bits we have divided the 5½-inch spaced shelves

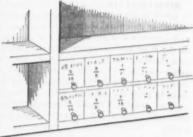


Fig. 109. - Drawer for Auger Bits.

in the center, making shelves with 21/2-inch space, Fig. 109. For these shelves we have made small wooden drawers 2½ inches high, 14 inches long, which is the depth of our shelving, and of different widths, from 2½ to 4 inches, to hold one box of the different sized Auger Bits, Ship Bits, Machine Wood Bits, &c. These drawers are faced green paper, and are drawn out by small brass ring pulls. For labels we print with black letters on the green paper and paste on the front as follows

> Ship Bits No. Screw %. Jennings, 5-16,

We give below, with illustrations, a description of the Hardware store of W. A. Young, Eldred, Pa., in which it will be perceived there are a number of features of interest. Relating to it Mr. Young says :

My building is 25 x 100 inside measure, 14 feet between floors. I have a driveway on the side to unload, and a sliding door in back room, also in elevator, which is 8 x 10 feet and runs from the basement to the up story, where my tinshop is. The salesro upper inch shelving. Being thus arranged I can use boxes of either 3 or 7½ inches in hight and 6 to 24 inches long, so as to get stock of same line together and not waste any room. The shelving is all 13 inches wide, 1½-inch, faced with chestnut, and boxes are all faced with the same. In the first space I have a side show case for tools, which is very much like one illustrated in *The Iron Age* some

st

time ago. Under each tier of shelving there time ago. Onder each tier of sherving there are tills with double doors, and 2 feet 8 inches high, 2 feet deep and 4 feet long, where I keep all surplus stock. Some of these tools have one and others two shelves, as necessary for the kind of stock contained in them. Through the center of store there are two platforms for Stoves, also a platform.

Is a 10-foot show case for Silver and Plated Ware, Spoons and small pieces. On first end of next counter ally small, namely, between £97. 17/6 and £98. 12/6 for spot, futures being held £1 \$\mathbb{E}\$ ton over spot prices. Some business has also foot show case for Silver and Plated Ware, such as Knives, Forks, Spoons and small pieces. On first end of next counter ally small, namely, between £98. 12/6 for spot, futures being held £1 \$\mathbb{E}\$ ton over spot prices. Some business has also foot show case for Silver and Plated Ware, such as Knives, Forks, Spoons and the store of the sto are two platforms for Stoves, also a platform for Stoves the whole length on left side. for Stoves the whole length on left side. Above this platform there is movable shelving, the bottom of which is 3 feet 6 inches above the platform. In this way we can show from 50 to 60 Stoves. I have double front windows, and like them very much. It will be observed that the doors are not in the center of the store, and it might be It will be observed that the doors are not in the center of the store, and it might be thought that the front would not look as well, but it does, and I had them so placed as a matter of convenience. The building is ceiled with narrow match pine, and only varnished, which makes it look almost like rich cherry. The balance of the woodwork wide that will easily hold a key of Shoes if rich cherry. The balantis of ash and chestnut. The balance of the woodwork

Further details of the arrangement are given below, reference being made to the accompanying diagrams, Figs. 110 and 111.

The right-hand window on entering store I always trim with Hardware of some kind, but hardly ever twice alike. At present the wall side is covered with red flannel, and on this at top I have samples of Files, Rasps, &c., arranged somewhat like cut in Sargent & Co.'s book, page 705. Under the Files are samples of Stocks and Dies, and

tions in London simultaneously being unusu- but the spirit of invention of the Chinese has my Nail Bins from 3d. Fine to 6od. We take
Nails out from back side, but they are open
in front, so that any one can see the size
wanted. On first end of last counter is a
patent Shot case, marked A, that holds
eight sizes of Shot, 25 pounds of each size.
By simply turning a lever you can get just i
pound of Shot, and there is no chance to
waste any A 2 repowd seek will turn out
be the starting rout of either a further adbe the starting point of either a further adaccount, I, that so far as known China is vance or decline. Meanwhile consumption devoid of petroliferous regions; 2, that the

overcome it, and for two years past innumerable lamps are manufactured at Canton so \$\frac{\pi}{20}\$. 12/6 for spot, futures being held £1 \$\frac{\pi}{20}\$ constructed as to best answer its purpose in ton over spot prices. Some business has also been done here for August at 21.90\(\phi\), provinces where petroleum is burned, the and September at 22\(\phi\) (@ 22.05\(\phi\). Spot primitive lamp thus being superseded, in Tin is obtainable at 22\(\phi\), and may be which a vegetable oil was burned, which, shaded. To-morrow the bi-monthly Banca sale will come off at Amsterdam, and the attention of the trade here and in Europe is now being drawn to that event which may now being drawn to that event, which may petroleum in China it should be taken into is everywhere fully kept up. About the Australian supply Messrs. Vivian, Younger & Fond, London, say: "Recent advices the control of the great rivers, there is a network of canalization throughout the bins for Horse Shoes, 12 in all, each 8 inches wide, that will easily hold a keg of Shoes if packed in. Over each bin of Shoes, just under counter top, is a drawer 6 inches deep in which we keep Horse Nails, Carpet Tacks in bulk and Wire Finishing Nails. On front of counter are brackets to hold two tiers of Floor Oil Clath. over the fact that consumption has run of Chung King, the distributive center of the floor Oil Cloth. At the left of entrance to office are holes through floor for all sizes of Rope from ¼ to t¼ inches. The Rope is kept in basement, and the ends running up through floor are fastened to hooks in wall. Thus we have the run way to measure the Rope off. At the left as you enter store is a counter or rather table on which are two show cases 6 feet each. In the first we keep Files are samples of Stocks and Dies, and under or rather table on which are two under these samples of Squares, Wrenches, &c. In center of window we have a sexagon pyramid very much like the patent Screw cases, and which can be turned

Counter or rather table on which are two how cases 6 feet each. In the first we keep Pocket Cutlery. We have boxes made on purpose, all of same size and just alike. Settlements to the supply thence would dwindle down saide from its coastwise shipments, the city of Canton—with its 1,600,000 inhabitants—purpose, all of same size and just alike. Settlements to the United States first five the Province of Kwangtung. Mr. Dunlop's statistics of petroleum it consumes, and furthermore the Province of Kwangtung. Mr. Dunlop's statistics of petroleum it consumes, and furthermore the Province of Kwangtung. Mr. Dunlop's statistics of petroleum it consumes, and furthermore the Straits of Canton—with its 1,600,000 inhabitants—purpose, all of same size and just alike. the Province of Kwangtung. Mr. Dunlop's statistics of petroleum import into China do not include Hongkong. At the treaty ports

they were a	1875.		1004	1005
	Gallons.	1883. Galtons.	1884. Gallons.	Gallons.
Shanghai	1,279,880	6,119,605	6,899,060	14,334,262
Ningpo	98,020	816,400	1.144,660	1,185,510
Chin Kiang	14,390	384,080	839,000	1,222,910
Wuhu	22,000	205,940	390,980	608,800
Kin Kiang	7,180	134,740	271,480	557,280
Hankow	29,410	1,322,771	2,736,910	4,148,346
Tientsin	23,650	398,340	386,250	725,510
Chefos	9,986	17,600	27,372	48,710
Wenchow		19,980	69,900	67,420
Foochow	6,589	235,950	34,292	63,065
Pakhot		17,620	91,110	69,700
Tamsin		6,008	34,900	131,430
Takow	211111	-11111	78,460	*****
Amoy	7,680	85,598	68,470	0 + 1 + 1 4
Swatow	*****	51,747	79,002	****
Kiung Chow		9,880	22,080	AVERE
Total	1,476,785	9,876,209	13,173,876	23,112,943

From	Galls.	Galls.	Galls.	Galls.
Shanghai	805,850	744,590	2,056,640	3,189,230
Ningpo	217,750	230,800	289,030	851,310
Chin Kiang	111,520	195,991	511,770	757,362
Wuhu	16,730	89,680	146,990	265,470
Kin Kiang	2,300	28,502	98,820	287,520
Hankow	118,370	269,077	1,048,820	1,827,810

In order to cast some further light upon the subject, so far as the figures are at our disposal, we shall add to Mr. Dunlop's Chinese import statistics the tables showing Ag.imp., pkge 1 Hdw., cs. . . . 9 the export from New York to China, Japan and other Eastern countries:

Export of Refined Petroleum from New York to Cer-tain Foreign Ports, from Jan. 1 to Dec. 31.

According to these tables there were shipped from New York alone in 1885: Gallon To China: 18,572,700 8,159,650

Y action with the second secon	- Anna farm
Total	26,990,85
To Japan: Yokohama	
Hiogo	12,567,756
Baigon	1,007,810
To Siam, Bangkok To Netherland and Spanish India	804,130 16,992,500
To Australasia	6,421,866
Total	95,610,086

is a 10-foot show case for Silver and Plated have been secured in that way, the fluctua- est obstacles in the way of its universal use,

	1875.	1883.	1884.	1885.
	Gallons.	Galtons.	Gallons.	Gallons.
Shanghai	1,279,880	6,119,605	6,899,060	14,334,262
Ningpo	98,020	816,400	1,144,660	1,135,510
Chin Kiang	14,390	384,080	839,000	1,222,910
Wuhu		205,940	390,980	608,800
Kin Kiang	7,180	134,740	271,480	557,280
Hankow	29,410	1,322,771	2,736,910	4,148,346
Tientsin	23,650	398,340	386,250	725,510
Chefos	9,986	17,600	27,372	48,710
Wenchow		19,980	69,900	67,420
Foochow	6,589	235,950	34,292	63,065
Pakhot		17,620	91,110	69,700
Tamsin		6,008	34,900	131,430
Takow	*****		78,460	*****
Amoy	7,680	85,598	68,470	
Swatow	*****	51,747	79,002	*****
Kiung Chow		9,880		47-17-8-8

Canton is omitted, as it draws its supply from Hongkong. The fluctuations in the import of some of the above ports were brought about by the Franco-Chinese war, which caused local restriction while it lasted. As the population of Hongkong and the

treaty ports taken together does not quite aggregate 6,000,000, it is interesting to note what amounts were reshipped into the interior from six of the leading treaty ports:

From	Galls.	Galls.	Galls.	Galls.
Shanghai	805,850	744,590	2,056,640	3,189,230
Ningpo	217,750	230,800	289,030	851,310
Chin Kiang	111,520	195,991	511,770	757,362
Wuhu	16,730	89,680	146,990	265,470
Kin Kiang	2,300	28,502	98,820	287,520
Hankow	118,370	269,077	1,048,820	1,827,810

Total .. 772,020 1,508,640 4,147,070 6,678,702

Total,		95,610,036	86,440,527	74,375,436
Australia New Zealand	4,722,326 1,699,540	4,722,326 1,699,540	2,813,836 858,451	2,284,946 660,180
	5-2,000	22,681.730	28,762,320	31,403,150
Banda	50,800			
Macassar	271,500			******
Banjermas-	200,000			
Singapore .	-1			
Rangoon	2,939,070			
Penang	1,292,410		*****	
Padang	537,750 1,467,750		******	* ****
Manila	537.750			******
Batavia	201,000			*****
Anjier	7,806,280	*****	*****	*****
East Indies.	7,925,170	25,941,030	28,699,200	16,838,690
Madras	473,820	to 111 days		. 200000
Kurrachee.	962,630	*****	*****	*****
Bangkok	804,130		*****	
Galle and Colombo.	1,150,400			
Point de				
	12,805,650		*****	******
Siam. Bombay	9,744,400			
India and		40,565,410	27,306,720	25,188,470
Hiogo	750,370			
Nagasaki	920,000			
Tientsin	258,000	*****	*****	*****
Saigon	1,007,310		******	*****
Yokohama.	10,897,380	******	******	*****
Hongkong.	.8,159,650	*****	******	
			****	****

If Japan, with a population of 36,700,118, and India, with a population of 35, 361,821, furthermore Australasia, with only 3,325,140 souls, receive from New York alone the numbers of gallons of refined oil set against them in the tables above, what may not be expected in course of time in the way of petroleum consumption of a country with a population of 403,259,000? Nor can Russian petroleum become much of a rival of ours in China till the Central Asiatic Railway is in operation to the Chinese frontier, which may take all that remains of this century. In British India, it is true, Russia hopes to supersede us in this item through pipe-lines via the Gulf of Persia much sooner. But who tells us but what even there American petroleum will be preferred to Russian permanently!

The statement is made that the Illinois all kinds. Between the end of shelving and office is a space of 2 feet fitted up for Crosscut and Drag Saws. Our office is not just what we would like, but does very well.

Any one in it has a full view of front part of salesroom. On farther end of first counter of salesroom.

Exports.

The following list embraces the Exports of Hardware, Machinery, Iron, Metals, &c., from the port of New York, for the week

ng July :	27, 1	1886 :	, , , , , , , , , , , , , , , , , , , ,		
h West	In		Mf. iron, pkgs Cutlery, cs	112	58 147
	2	29	New Bruns	1201	ck.
. cs	222	114	Pig iron, tons.	100	1,900
are, cs bdls	8	78 21	Havre		4 9 00.11
on, pkgs	23	31	Sew. ma., cs 2 Cop. ore, sks. 9	350	6,920
pkgs case	5	60	Copper, cka. (180	5,000 $78,750$
lass	1	51	Mach'y, pkgs.	5	847
ish West			Pumps, pkgs. Ag. imp., pkgs	16	1,000
mp.,pkgs ma.,case	22	241	Lisbon		44000
kegs	15	45	Scales, cs	6	
on, pkgs kegs	7 40	65 135	Clocks, case.	1	12
Hambu	rg.		NT - 11	24	305

Dan

Antwerp. Arms, cs.... 17 Mach'y, pkgs. 18 Hdw., cs..... 8

Christiania.

Rotterdam

58 Liverpool.

Hdw., cs....

Hdw., cs.... Mach'y, pkge.

Cutlery, cs....

Revolvers, cse

Newcastle.

Hull.

Bristol.

Glasgow.

Leith.

Gibraltar.

London

Wire g'ds, cs. 2

Hdw., pkgs... 172

Plumbers' material, pkgs

Mach'y, pkge. 1

Mach'y, pkgs. 2 Ag.imp., pkgs 3

Mach'y, pkge. Clocks, cs....

Sew. ma., cs. 473 10,272 Clocks, cs.
Mach'y, pkgs.
Wringers, cs.
Arms, cs.
Valves, cs.
Hdw. pkgs.
Saws, cs. Ag.imp., pkgs Mf. iron, pkgs Lead traps, cse Tacks, case... Nails, case... Wire cloth, cse 1
Nails, kegs. 477
Mf. iron, pkgs 765
Mach'y, pkgs. 347
Engine. 1
Pumps, pkgs. 5
Ag. imp., pkgs. 20
Metal gds., cs. 8
Cutlery, cs. 27
Tinware, cs. 17
Cartridges, cs. 12 Bremen Hdw., cs..... 25 Mach'y, pkgs. 4 S. rollers, cs. 12 Ag. imp. pkgs 78 French West Indies. Copenhagen. Tinware, cs. Porto Rico

Hdw., pkgs... Mf. iron, pkgs 27 Sew. ma., cse. 1 Venice. Clocks, bxs... 435

Japan. Mf. iron, pkgs 36
Hdw., cs...... 3
Clocks, bxs... 60
Venezuela.
Mach'y, pkgs. 16
Cutlery, cs.... 2 Venezuela.
Mach'y, pkgs. 16
Cutlery, cs... 2
Hdw., cs... 60
Mf. iron. pkgs 14
Ag.imp., pkge 1
Pumps, pkgs. 6
Tinware, cs. 4
Nails, kegs. 8 1.259 Cutlery, cs. 5 664
Saws, cs. 95 535
Mach'y, pkgs. 64 4,112
Copper matte,
bags. ...11,334 101,995
Pumps, pkgs. 16 1,176
Clocks, cs. 56 1,779
Mf. iron, pkge 1 20
Steel, pcs. 10 25
H tw., pkgs. 48 1,554
Ag. imp., pkgs 72 6,999
Sew. ma., cs. 206 4,001
Brass goods,
cs. 5 315 Clocks, Ch.... Mexico. Per. caps, cs. . Sew. ma., cs. .

Pumps, pkgs. Tacks, cs.... Ag.imp., pkgs Nails, kegs... Nails, case... 124 Tin, cs.
Iron, pkgs...
S. evaporators
Lead pipe, bdls
Mf. st'l, case.
Cutlery, cs...
Mf. iron, pkgs...
Hdw., pkgs...
Clocks, case...
Clocks, case...
Cartridges, cs.
Mach'v, okgs... 472 124 96

Cartridges.cse 1
Mach'y, pkgs. 47
Car-wheels... 100
Pig iron, tons... 24
Br. goods, cse 1
Mach'y, pkgs. 16
Tinware, case 1
Lead. pigs.... 2
Clocks, case... 1
Hdw... 2... 2
Tinware, cs... 2
Clocks, cs... 3
Mf. iron, pkgs. 5

Clocks, cs....
Mf. iron, pkgs
Hdw., case...
Madeira.
Hdw., pkgs...
Brazit. Hdw., pkgs... 172 5,556
Pumps, pkgs... 3 115
Mf. iron, pkgs 363 5,725
Iron drums... 120 110
Sew.ma., cs... 89 7,983
Ox. zinc, bbls. 100 797
Clocks. cs... 130 3,011
Saws. cs... 2 52
Ag.imps, pgs. 67 1,181
Mach'y, pkgs. 148 9,054
Tinfoll, case... 1 28
Fritish Austratia. Brazil.
Cutlery, cs. ... 38
Hdw., pkgs. ... 185
Clocks, cs. ... 25
Nails, kegs. ... 134
Tacks, cs. ... 6
Nails, cs. ... 17
Pumps, pkge. 1
Cotton gins, cs. 8
Revolvers, cs. 2 872 808 85 99 80 295 851 British Australia. Revolvers, cs.

Hdw., cs...... pkgs...... 9
Wire gds., cse 1
Cutlery, case. 1
Agl.imp.,pkgs 59
Clocks.pkgs. 198

Mach'y, pkgs. 2
United States
Colombia.
Sew. ma., cs. 197
How., pkgs. 116
Mach'y, pkgs. 187
Tinware, cs. 19
Yel. metal, cs. 2
Valves, cs. 4
Guns, case... 1
Plumbago, bbis 2
Tacks, cs. 2
W. clos., pkgs. 4
Conner, case. Cutlery, case. 1 6
Agl.imp.pkgs 59 1,180
Clocks, pkgs. 198 3,092
Saws, cs.... 22 872
W. mills, pgs. 36 1,160
Axless, cs. 25 484
Arms, cs... 7 550
Bells, pkgs. 7 170
Hdw., pkgs. 1184 16,400
Mach'y, pkgs. 7,16,963
Springs, cs. 3 305
Wringers, cs. 5 85
Cartridge cs.
case... 1 62 W. clos., pkgs Copper, case. Clocks, cs. B. rails... Newfoundland.

Clocks, cs. 14
8, rails. 24
Ag.mp.pkgs 4
Copper goods,
cs. 5
Water wheel 1
Lead pipe, b. 9
Mf.iron, pkgs, 422
Cuttery, cs. 84
Scales, cs. 45
Wire gds, cs. 2
Lead, bars. 2
Lead, bars. 2
Lead, bars. 3
Lead, bars. 5
Lead, bars. 5
Lead, bars. 5
Lon, pkgs, 101
Br. g ds, cs. 2
Nails, kegs. 183
Steel, cass. 1
Arus, cs. 6
Cartridges, cs. 812
Tin, cs. 5
Iron safes. 2
Pumps, pkgs. 5
Argentine Repu Ag. imp..pkgs Tin tags, case Tinfoil, cs..... Catania. Revolvers,cse 160 British West Indies. Mf. iron, pkgs 46 Yel. met., cs. 4 Tinware, cs. 10 Ag.imp..pkgs. 7 293 214 204 60 Ag.imp..pkgs. Wagon matl., Pumps, pkgs. Iron safe.... Nails, bxs... W. mill matl., 815 50 142 14 222 Revolvers, case.
Arms, case.
Hdw., pkgs.
Nails, kegs.
Sew. ma., cs.
Scales, cs.
Clocks, cs.
Cutlery, ca.
Mach'y, pkgs.
Cartridges, cs. 112

Argentine Republic.
Sew. ma., cs. 291 5,208
Scales, cs. 27 512
Mf. non, pkgs 227 2,511
Mf. non, pkgs 227 2,511
Mf. non, pkgs 227 2,511
Nalls, bks. 250 914
Cutlery, cs. 12 163
S trucks. 36 130
Wagons. 11 2,275
Arms. case. 1 105
Tacks, case. 1 10
Hdw., pkgs. 442 9,816
Ag.imp., pkgs3419 27,962
Mach'y, pkgs. 211 5,425
Engines. 4 4,550
Shoe nal's, cs. 100 370
Saws, cs. 2 6,00
Clo.ks, cs. 45 2,398
Distilling app.,
pkgs. 13 1,290
Central America.
Mf. from lakes 128 Canada. 3 314 pkgs. 13 1,1 Central America Mf. Iron,pkgs. 178 Clocks, cs. 11 Iron,pkgs. 34 Nalls, kegs. 10 British Honduras. Cutlery, cs. . . 3 Nails, kegs. . . 22 Mf. Iron, pkge 1

Nova Meotia. Nickel badges.

WAREROOM 25 FT. X 31 FT COUNTER SHEARS & DESK 2'6 COUNTER COUNTER. SCALES A COUNTER & COUNTER OFFICE SHELVING FOR HARDWARE AND TOOLS

Fig. 110. -Plan of Store and Wareroom of W. A. Young, Eldred, Pa.

around in the same manner. This is 2 feet them we keep sample Knives with all the o51 same time last year. At the close it across bottom, I foot across top and 3½ feet blades opened. We like this arrangement is cabled from London that spot Tin is high; is covered with black alpaca, and on very much. In the next case we keep Revent the control of the we have samples of Augers. Auger Chisels, Saw Sets, Drawing Tools, &c. The bottom of window is also covered with black alpaca, and between the pyramid and the wall are samples of Iron Planes and length, the other from end of center counter. like goods. Next to entrance we have samples of Locks and Knobs of all kinds, Door Bells, &c. The left-hand window is used for Lamps, Brass Stands, Bird Cages and fancy goods. In the side case we keep Hand Saws, &c. At the bottom of the

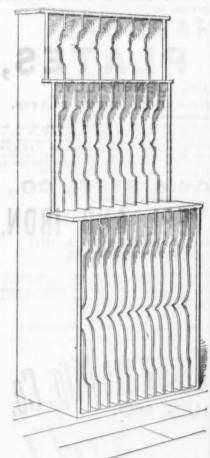


Fig. 111 -General View of Rack for Holding Glass.

next tier of shelving is Table Cutlery, som drawers being arranged specially for that. Above Cutlery are such goods as Can Openers, Bull Rings, Cattle Leaders, Match Safes, &c., and in top boxes over two first divisions of shelving and Shelf Brackets. Then come such goods as Cupboard Catches, Picture Knobs, Till and Drawer Butts, Bolts, Door Bolts, Wrought and Cast Butts, Locks and Knobs of all kinds, Coat and Hat Hooks, Hatchets, Hammers, Screw Drivers, Dividers, Carpenters' Braces, Try Squares, Augers and Bits, Framing and gods that can be sampled. Then come Bright Wire Goods, Hasps, Hooks and Staples, Strap Hinges, Carria; e and Tire Bolts, Machine Bolts, and next to office Horse Cards, Curry Combs and Brushes of all kinds. Between the end of shelving and office is a space of 2 feet fitted up for

volvers, Shears, Scissors, Razors, &c. Under the table is kept Japanned Toilet Ware. Part of these platforms are now used for Refrigerators, &c., but in the Stove season we use them for that purpose only. Over the long platform we have suspended from ceiling two dozen bronzed hooks on which to hang Library Lamps, so one can reach the Lamps from floor. Over the center counter is one dozen of same. These are all the goods we have hanging from ceiling in

Cn the partition wall at left, just back of Stove Platforms, we keep Shovels and Manure Forks. For these we use to inch Harness Hooks, each one holding half-a-dozen Shovels or Forks. We have four rows, seven in each row. The top row is for longhandled, and we use two hooks in place of one, placed about 3 inches apart, and hang Shovel over these, thus enabling one to reach the handles from floor. The next row is placed so that the handles come between the

At the left, as you enter back room, are bins for barrels of Dry Paint, and shelves over them for Colors and Mixed Paints. All oils are kept in basement and also a Glass rack or case, for which I send you a dia-gram, Fig. 111. Just in front of this is cut-ting table, fastened to wall with strap ting table, fastened to wall with strap hinges, so that when not in use it can be raised out of way. Back of this is sliding door, where we take in and load heavy goods. At the further end of back room, goods. At the further end of back room, and opposite entrance, is rack for Rubber and Leather Belting, thus enabling us to measure off the full length of store (100 feet). In the further left-hand corner is suspended from the ceiling a rack, 6 x 16 feet, on which we keep Hand Rakes, Hoes, &c. It is 7½ feet from floor, and consequently does not interfere with any goods

Metal Market.

Copper .- Nothing in the way of sales has transpired during the week in either Lake spot or futures, and, if anything, the market on this side is duller than ever, with no inclination to operate either way, the trade waiting to see the next move by the Calumet and Hecla. There is meanwhile no change in quotations. We quote at the elose: Lake Ingot, 9% # @ 10#, and other brands, 9# @ 91/2. Messrs. James Lewis & Son, Liverpool, say, July 16: "We have to record a further fall in the value of Copper during the past fortnight, Chili Bars hav ing gradually declined from £39 12/6 to £38. 17/6, cash. Smelters continue to complain of the absence of orders, and business with India has again been interfered with by the decline in the value of silver to 43 ad. 7 ounce. Sales of furnace material continue on a small scale, and the deliveries have the new oil.

Tin.-There has been a good deal of busi-

Tin Plates-Have been very quiet. We quote ordinary brands, large lines, per box : Charcoal Bright, \$4.50 @ \$4.75; do. Ternes, \$4.25 @ \$4.35, and Coke Tin, \$4.371/2 @ Liverpool is recovering somewhat, \$4.45. and quotes Charcoal, 15/@ 16/6, and Coke Tin, 13/3 @ 13/6.

Lead.-The London market has declined to £12. 15/ Soft Spanish, and to £13. 5/ English Pig, causing Common Lead to be offered here at \$4.85 from the other side, which fact has for the moment upset our market. At \$4.82½ there would to-day be buyers of Domestic Common for August and September, but the market is paralyzed, every body preferring to wait and see how the London market will shape this and next week. The Western market is not disturbed by the incident named, but is steady at \$4.55 @ \$4.75.

Spelter and Zine.-Common Domestic Spelter has been featureless, inactive and normal at 4.40¢ @ 4.60¢, and Silesian at 476¢, London giving way with the latter from £14 2/6 to £14. Bertha Refined we quote 8¢. Sheet Zinc enjoys a fair demand at 5.70¢ @ 5.95¢.

Antimeny .- A marked improvement is noticeable in Cookson's, the stock of which is light, and a better feeling has developed, carrying the price to 81/4 @ 9¢, while Hallet is worth 8¢, the tendency in both being upward at the close.

New York Metal Exchange.

The following transactions are reported:

FRIDAY, July 23.	
5 tons Tin, August. 5 tons Tin, September 10 tons Tin, September. 25 tons Tin, spot.	22.25¢ 22.00¢
MONDAY, July 26.	
5 tons Tin, August. 5 tons Tin, August. 5 tons Tin, August. TUESDAY, July 27.	21.95€
5 tons Tin, September	22.05¢

The Future of Petroleum Importation into China

The consumption of refined petroleum in China has for a couple of years past in-creased at such a rate that those who have studied the question on the spot arrive at the conclusion that there is a great future in conclusion that there is a great future in store for it in that country. During his travels in China last year Mr. William B. Dunlop devoted special attention to the subject, and from the elaborate report he has made we extract the following : During a number of years there was strenuous and powerful opposition to the use of petroleum in China; there was in the first place the deeply-rooted conservatism of the masses and their ignorance as to the advantages of the new oil. Next there was the aversion been much less than the arrivals, causing a of the mandarins to it arising from an infurther increase in the stocks." Chili Bars have fluctuated in the London market as follows: July 22, £38. 15/; 23, £39; 26, £39. 5/; 27, £38. 17/6; 28, £38. 17/6. Best Selected has not varied from £43.

Tim.—There has been a good deal of busing the following the stock of the mandarins to it arising from an innate abhorrence of all that is novel; they also expressed their apprehension of the mandarins to it arising from an innate abhorrence of all that is novel; they also expressed their apprehension of the mandarins to it arising from an innate abhorrence of all that is novel; they also expressed their apprehension of the mandarins to it arising from an innate abhorrence of all that is novel; they also expressed their apprehension of the mandarins to it arising from an innate abhorrence of all that is novel; they also expressed their apprehension of the mandarins to it arising from an innate abhorrence of all that is novel; they also expressed their apprehension of the mandarins to it arising from an innate abhorrence of all that is novel; they also expressed their apprehension of the mandarins to it arising from an innate abhorrence of all that is novel; they also expressed their apprehension of the mandarins to it arising from a linear them. Shanghai, and at present it is conceded on all hands that there is little danger, compar-



L. COES'

GENUINE IMPROVED
Knife Handle

PATENT

Screw Wrenches

MANUFACTURED BY

L. COES & CO.,

Worcester, Mass.

ESTABLISHED IN 1839.



Registered March 31, 1874.

Sectional view illustrates our NEW KNIFE HANDLE, showing Malleable Iron Frame and Shank of Bar keyed into position. To Straight Bar, Extra LONG NUT

FOR SCREW IN JAW.

The Best Made and Strongest Wrench in the Market.

Send for Illustrated Price List and Circular.

J. C. McCARTY & CO., NEW YORK,

Sole Agents.



Nos. 20 to 26 Main Street,

CARPENTERSVILLE. KANE CO., ILL.

MANUFACTURERS OF

BLACKSMITHS'
TOOLS,



JACK SCREWS,

THIMBLE SKEINS,

SADIRONS,

COPYING PRESSES AND STANDS, &c.

American Manufacturing Company,



MANUFACTURERS OF THE

ONLY PERFECT ADJUSTABLE

Sliding Door Hangers,

ONLY PERFECT

TRANSOM LIFTER.

ADJUSTABLE SAW VISES, SPOKE SHAVES, SPOKE TRIMMERS, BENCH HOOKS, HOLLOW AUGERS, EXCELSIOR CAN OPENERS,



Parlor Door Hanger.

>LAMP STOVE

Sells Quick and

Pleases Everybody.

Well Advertised,

Why not try them?

BERKELE CO. Selling Agents,

The ALFORD &

"FLORENCE"

77 Chambers St.,

Patent Braided Cotton CHALK LINES, &c.

LLOYD & SUPPLEE HARDWARE CO.,

PHILADELPHIA.

J. H. Sternbergh, Reading, Pa., MANUFACTURER OF

REFINED BAR IRON.

Bolts, Nuts, Washers, Rivets,
LAG SCREWS, TURNBUCKLES,
Rods and Forgings for Bridges and Buildings,
&c., &c., &c.

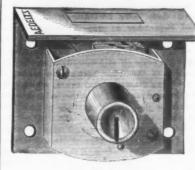
JOHN N. POTT.
MINING ENGINEER,

Allentown, Pa.

SPECIALTY,

New York. Exploration and Development of Coal Lands.

A. E. DEITZ.

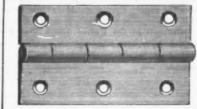


No. 51 Lock

J. C. McCARTY & CO., Agents,

NEW YORK.

Factory, BROOKLYN, F. D., N. Y.



W. & J. TIEBOUT,

MANUFACTURERS OF

BRASS, GALVANIZED & SHIP CHANDLERY
HARDWARE.

Nos. 16 & 18 Chambers Street, NEW YORK.



ALWAYS GIVES THE UTMOST SATISFACTION

Main Belting Co.

Manufacturers of
THE LEVIATHAN
COTTON
BELTING

Unsurpassed for Strength, Durability and Cheapness.

Made to any Length, Width and Strength.

Main Driving Belts.
Guaranteed to Run Straight, Even Throughout.

No Cross Joints, Unsaffected by Damp.
Clings well to the Pulley, Ras no equal. In fact, is THE BELT.

MAIN BELTING

COMPANY,
S. W. cor. Ninth and Ree
Sts., Philadelphia.

48 East Randolph St

CHICAGO.

The Strongest and Most Powerful TIRE BENDER IN THE WORLD.



This is the only Tire Bender Geared with a Worm—the strongest and most powerful Tire Bender made, giving it a re-ular and easy motion, allowing no slipping of the tire or backward strain on the crank or operator. We guarantee it to bend from the smallest tire to 4 x 1 is. with comparative ease. The tire is easily removed by drawing the centre roll straight out from the worm. The two end rolls are supplied with wrought-iron collars, in order to keep the tire from warping. The size of the tire is adjusted by a screw, enabling it to bend from a FiPTIS WIREL TO THE LARGEST TIEE. In workmanship it is fully up to the standard of our Celebrated Champion Blowers and Portable Forges.

Weight, 235 lbs.

THE CHAMPION BLOWER AND FORGE CO., LANCASTER, PA., U S. A.



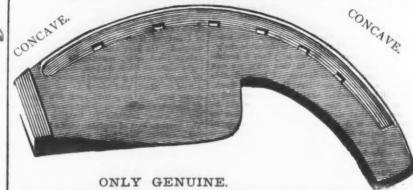
F. DEMING,

BUILDER OF

SPECIAL MACHINERY,

WATERBURY, CONN.

"GREENFIELD" FORGEDZOX SHOE.



Made under the Parker and Colburn Patents, from Burden's H. B. and S. Iron. Nail holes punched, and every shoe perfect. The Parker and Colburn Patents cover broadly the dies in which the Shoes are forged. We are the only licensees, and all parties are cautioned against using either of the dies or the forging mechanism or processes so protected, as our rights under said patents will be fully maintained. While we can furnish either the Concave Shoe with One Calk, or the Flad, or the Flad Shoe with Two Calks, we emphatically recommend the Concave, with one Calk, for the following reasons, vis.:

Hyst.—Because the entire bearing of the shoe should come upon the shelf of the hoof, and not upon the ball or tender part of the foot, as is necessarily the case with the flat shoe. This principle is recognized by all experts in the shoeing both of oxen and horses, and will prevent a tendency to sore-footedness.

Second.—Because by having one Calk only, the shoe can be cut off or lengthened and fitted more perfectly to the foot.

rd.—Hecause by having one Calk only, the shoer can make the other Calk at any angle he desi No. 1. Full Length, Concave, 5 these, Weight, per Set of Eight Shoes, 3 pounds.

Packed in boxes or kegs of 100 pounds, half each rights and lefts. Full weight, and no charge for packages

— PRICES.—

For orders of One Ton, or more, 9 cts. per pound.

"1000 lbs. "91/4"

For orders of 500 lbs., or more, 10 cts. per pound.

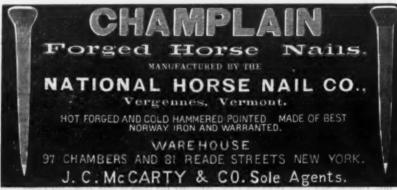
"1000 lbs. "101/4"

Terms. Net Cash 30 days.

Made only by

MILLERS FALLS CO.,

74 CHAMBERS ST., NEW YORK.



H. B. SEIDEL. President. W. HASTINGS, Vice-Pres. and Gen'l Mgr. E. T. CANBY, Sec. and Treas.

THE SEIDEL & HASTINGS CO.

WILMINGTON, DELAWARE,

New York Office, No. 221 Pearl, Corner Platt Street,

BOILER PLATES,

AND PLATE IRON CENERALLY.
ALSO BEST QUALITY HOMOGENEOUS STEEL PLATES.

We ask the special attention of the trade to our C. H. No. 1 Beller Plates, which we manufacture expressly for the Shells of Steam Bollers and stamp 50,000 pounds T. S. when desired. One hundred and sixteen tests of this iron, made during the last three years by the U. S. Inspectors of Steam Vessels, show an average tensile strength of 58,505 pounds to the sectional square inch, and an average reduction of area of the fractured section of 80% per centum. Our prices are as low as the production of a good article will admit of.

POTTSVILLE IRON & STEEL CO.,

STRUCTURAL STEEL AND IRON,
VIZ., BEAMS, CHANNELS, TEES, ANGLES, PLATES AND BARS; AISO STEEL
AND IRON AXLES FOR FREIGHT AND PASSENGER CARS.

This Steel is manufactured by the CLAPP-GRIFFITHS process, and is specially adapted, in addition to the above, for Boller and Bridge Rivets, Wire Rods, Nail Plates, &c. &c. Our Mild Steel is well adapted for use in place of the best quality of Wrought Iron; where a greater strength and ductility is required, it welds readily as Iron. Also Billets, Slate of all sizes and any desired temper. Shafting of all sizes in stock, from which prompt shipments can be made.

Brewery, Malt and Ice House Construction a Specialty.

Duggan-Parker Hardware Mig. Co.

PURE TURKISH EMERY.
WALPOLE EMERY MILLS.

South Walpole, Mass

MANUFACTURING.

Iron and Steel.

It is reported that Lucinda Furnace (anthracite), in the Schuylkill Valley, Pa., which has been idle for nearly four years, will be repaired and blown in shortly.

About 500 employees of the American About 500 employees of the American Tube and Iron Company's mill, at Middletown, Pa., have struck by order, it is said, from the headquarters of the Knights of Labor of Philadelphia. The strike is ascribed to the refusal of the company to restore the wages of 1883 and to reinstate two Knights of Labor who had been discharged.

A meeting of the Tube and Pipe Manufacturers' Association was held at the Monon-gahela House, Pittsburgh, last week. The propriety of increasing the price of goods was discussed, but in view of the conditions was thought best merely to reaffirm the old prices. The association adjourned to meet in Philadelphia August 25.

An order for 600 tons of steel plates and girders is being turned out by the Linden Steel Works, Pittsburgh. It will be used for the construction of the Vanderbilt yacht in

The new works of the American Tube and Iron Company, at Youngstown, are about two-thirds finished and will be ready to start in October. The capacity will be about 150 tons a day. At the present skelt iron bought in the district will be used, but the company intend eventually to build pud-dling furnaces and a rolling mill to make their own skelp iron.

Lindsay & McCutcheon, proprietors of the Star Iron Works, in Allegheny, Pa., have commenced work on a new iron building to take the place of the wooden structure destroyed by fire recently. It will be 250 x 80 feet. They are also erecting a very strong brick building which will have three stories above ground and one below. This will be used as a wrought-iron strap and tee hinge factory. The whole will cost \$50,000 or \$55,000, and will be constructed by the well-known iron builders, Messrs. Anderson, Porter & Boyd, of Allegheny.

Hussey, Howe & Co., Limited, steel manufacturers of Pittsburgh, will close down their works in all departments on August 1, for the purpose of stock-taking and making repairs. The above firm ship annually to various parts of the German Empire and to various parts of the German Empire and to Sweden 100,000 steel rake teeth of light, springy 36-inch steel, completed and ready for use by the manufacturer of the hay rake. This trade they have enjoyed for five or six years.

Oliver Bros. & Phillips, of Pittsburgh, are filling a large order for bolts for the Union Pacific Railroad. Eight carloads have already been forwarded.

The employees of the Pennsylvania Tube The employees of the Pennsylvania Tube Works, at Soho, near Pittsburgh, have received an advance of 10 per cent. in their wages. About six months ago the men were reduced 10 per cent., and the officials of the company promised to restore their old wages as soon as the price of pipe advanced. The large demand for pipe caused by the natural-gas operations advanced prices about a month ago, and the firm, true to their a month ago, and the firm, true to their word, gave the advance.

The St. Louis (Mo.) Shovel Works have been awarded a contract by the Interior Department to furnish all of the Indiana agencies with shovels for the current year. They are now engaged in filling the first requisition. They have just shipped 102 bundles of shovels to Mexico.

At a meeting of the directors of the Thomas Iron Company, of Hokendauqua, held on the 22d inst., the usual 4 per cent. semi-annual dividend was declared. The above company have blown out their Key-stone Furnace for the purpose of making repairs. It will blow in again as soon as repairs are completed.

The Cherokee Furnace Company, of Georgia, will soon extend their E. and W. Railroad to Birmingham.

Machinery.

The Mason Machine Works. Taunton, The Mason Machine Works. Taunton, Mass., are building six large mules for the Wamsutta Mills corporation. Up to a short time ago this corporation ordered all its machinery from England, under the impression that nothing suitable could be purchased in this country. *A loom made by the Mason which did covered to the state of the s

Louis, Mo., have been awarded the contract for the pumping engines for the new Phila-delphia, Ohio, water works. They will be of the Blake duplex type, having a capacity of 2,000,0000 gallons per day.

George E. Lloyd & Co., of Chicago, have about completed a new wire staple machine for Griswold & Co., Troy, N. Y., which will make from 2500 to 3000 staples per minute. The recent shipment of electrotyping and stereotyping machinery made by this firm to the Chicago Electrotyping and Stereotyping Company amounted to over \$5000, and is thought to have been the largest order of the kind over given in the West. There is a receiver of contracting the their works the in process of construction at their works the venth complete outfit of stereotyping machinery for the Western Newspaper Union, They have just finished a large stereotyping outfit for one of the manufacturers of Webb prosses. The works are running 131/2 hours a day.

The Acme Machinery Company, Cleveland, are very busy running 12 hours a day on orders, and no stock on hand. They are putting in more tools and machinery; have just put up a storage-house for castings, and are making many improvements to their

The Columbia Water Company, Columbia, Tenn., will enlarge their plant by building a new reservoir and a new pumphouse and putting in additional machinery.

The Jones Tubular Grate-Bar Company, which will keep them busy for some time. of Milwaukee, representing a capital stock of \$400,000, have filed articles of association. Peerless pipe cutting and threading mahas been kept secret.

The incorporators are H. E Jacobs, C. W. White, of Milwaukee, and A. R. Jones, of Madison. The object of the company is to deal in grate-bars and other furnace appliances

R. M. Brooks, Jenkinsville, Ga., is ne gotiating for machinery for his new foundry and machine shop.

The Ottumwa Iron Works, Ottumwa, Iowa, have shipped a pair of double hoisters to Coal Hill, Ark., and entered orders for one pair double cylinder four-drum tail rope engines and one pair of two-drum tail company, of Chattanooga, Tenn. In addition to these we understand they have a very fair trade in stationary engines and general machinery.

A shipment of two locomotives, several cars and large supplies of railway material to the port of Almeria, on the Spanish Coast, on account of the Marvel Iron Ore Company, was made from New York City last week. Steel rails for the construction of a road at the company's mines go direct from England.

All the machinery and tools pertaining to the chain shop at West Middlesex, Pa., have been purchased by P. H. Stendish, of Cuya-hoga Falls, Ohio, who will at once remove them to that place.

The Wilson-Synder Mfg. Company, Pittsburgh, have secured the order from the City Water Committee for two duplex plunger pumps of 1,000,000 gallons daily capacity each. They report plenty of orders. They have lately sent 32 inch duplex plunger pumps of 22 inch duplex plungers. a 21-inch duplex plunger pump, 4-foot stroke, to the Edgar Thomson Steel Works. This is one of the largest pumps of the kind in this part of the country.

The Erie Engine Works, Erie, Pa., are active. Recently they received orders from Caribou, Me; San Francisco, Cal., and the City of Mexico. Within the past two weeks they had 25 engines and 14 boilers on their books for immediate shipment.

The Chicago, Burlington and Quincy Railroad are equipping 50 of their cars at the Peninsular Car Works, Detroit, Mich., with the Ames car coupler.

The Warner & Hough Machine Com-pany have their new shops in St. Paul, Minn., nearly completed, and will be at work in them within a month. The machine shop is 100 x 50 feet, and the foundry 40 x 70 feet. They will build steam engines and special tools for machine shops. They have accepted the agency for Pedrick & Ayer's railroad repair shop tools, also for Harrington's hoists and elevators.

The Deane Steam Pump Company, of Holyoke, Mass., are engaged in the construction of pumps having a capacity of 4,000,000 gallons each, for the cities of Montgomery, Ala.; Pensacola, Fla., and Charlestown, W. Va., and of 2,000,000 each for Vincennes, Ind.; Sterling, Ill., and Gadston, Ala.

McLanaban & Stone, founders and ma-chinists, of Hollidaysburg, Pa., are building a set of their new ore jigs for the Keystone Manganese and Iron Company, of Bates-ville, Ark., and also one set for the Ætna Iron Company, of Ætna, Tenn.

The Wainwright Mfg. Company, 65 and 67 Oliver street, Boston, Mass., and 93 Liberty street, New York, manufacturers of feedwater heaters, superheaters, filters, expansion joints, radiators and corrugated tubing, have been forced by their numerous orders to enlarge their plant, and are erecting an addition to their factory of four stories. addition to their factory of four stories, 31 x 78 feet. This will contain the machine shop and corrugating and radiator departments. Their former building has been moved, and will also be utilized as a machine shop. By this change they will be enabled to increase their product three or four times

The Jarvis Engineering Company, Boston, Mass., have closed a contract with the Nashua Electric Light Company, Nashua, N. H., for a complete steam plant to consist of a 60horse-power Armington & Sims Company engine, boiler set with the Jarvis patent furnace, Sheffield grates, heater pump and injector. Work will commence at once.

The works of the Union Foundry and Machine Company, of Preble avenue, Allegheny, Pa., were destroyed by fire Tuesday morning, the 20th inst., entailing a loss of \$25,000. The building, which was of brick thrown out of employment. Natural-gas fixtures and fittings of metal frames for safes were manufactured in addition to gen-

Thompson, Epping & Carpenter, of Pitts-burgh, have within a week shipped a min-ing pump to Desdwood, Dak.; two hydraulic pumps for Park Bros. & Co.'s new mill, two boiler feed pumps to the De Pauw Glass Works, New Albany, Ind., and have re-ceived orders for a large mining pump for Steubenville, Ohio, and two for Birming ham, Ala. Their works are running full force and time.

D. B. Cruickshank, machinery dealer of Providence, R. I., has shipped the following machinery during the month of July: A 15 horse-power boiler to the Carmichael Mfg. Company, Shannock, R. I.; a 6 x 12 hoist ing engine and boiler to Cutting & Bishop, Worcester, Mass.; a 15-horse-power boiler to Wauregan Brick Company, Danielsonville, Conn.; a No. 5 Webber pump and 6 x 12 hoisting engine to F. E. Shaw, Ware, Mass.; a 30inch x 15-foot engine lathe and 15-inch x 6foot speed lathe to the American Indurated Fiber Company, Mechanicaville, N. Y.; 300 feet 2 T shafting to S. H. Greene & Sons, River Point, R. I. Mr. Cruickshank reports

business unusually brisk this month. The Bignall & Keeler Mfg. Company, of Louis, Mo., are running full time and handed. They have in hand orders

chines to Chicago. A No. 12 machine was shipped to the same city on the 26th inst Smaller machines have been sent to Pitts burgh, Kansas City, New Bethlehem, Pa., and Columbus, Ohio. They are now filling orders for Syracuse, Pittsburgh, Toronto, Canada, Deming, New Mex., and Kansas City, Mo. In their wood-working department they are very busy, working on orders exclusively. They are building machines for shipment to the Argentine Republic, Arizona and Louisiana. The local trade also is brisk, and prospects are encouraging.

Miscellaneous,

R. C. Snowden, of Elizabeth, Pa., informs us that he has recently been granted a patent for a sheet-metal shingle, and has formed a company for the purpose of manufacturing the same. The site selected for the new works is McKeesport, Pa., and when completed they will have a capacity of 350 to 400 squares per day. About 100 men will be applyed at the start. men will be employed at the start.

The Cincinnati Corrugating Company, of Cincinnati, Ohio, are extensively engaged in the manufacture of fire-proof corrugated iron arches for ceilings, and iron for roofing

It is rumored that the proprietors of the Beaver Falls Cutlery Works, at Beaver Falls, Pa., dissatisfied with its success so far, are contemplating the converting of the works into a steel-nail manufactory. important feature of the undertaking is that it is intended to make the new concern cooperative. A number of the employees, to-gether with certain of the stockholders and some Pittsburgh nail feeders, are interested in the scheme. The plan is not fully conin the scheme. The plan is not fully con-summated, but it is now receiving serious

During the six months of this year ending June 30 the receipts for gas supplied by the Philadelphia (Westinghouse) Natural Gas Company, of Pittsburgh, averaged about \$130,000 per month. Owing to the extensive improvements in the company's old lines the expenses have averaged \$45,135.98 per month. The managers expect the reper month. The managers expect the receipts of the remainder of the year to exceed those of the first six months and the expenses to be less. The total operating and other expenses for the three months from April 1 to July 1 were \$155,621.92; total earnings from gas \$204.435; ner earnings from gas, \$394,401.18; net earnings, \$238, 779.26; dividends, \$150,055.91.

The Ensign Car Works, at Huntington W. Va., have orders booked sufficient to keep the concern running for a year. Last week 40 cars were turned out for the An-napolis and Baltimore short line.

The Monumental Seal Lock Company capital stock \$100,000, have been incorporated at Baltimore to manufacture locks, with Nicholas G. Penniman, John A. McGarry, Robert A. Dobbin, W. F. Beasley and William Gilmore as directors.

The Butler Plate Glass Company, of Butler, Pa., will soon be in operation. The company own 20 acres of land in Butler, upon which five buildings are being erected. These are for the melting, annealing, grinding, cutting and shipping departments. Three of the buildings are now under roof and the others will be completed by Layuavy if rock. 4000 square feet of glass per day, and about 400 persons will be employed.

Bridgeport Brass Company, Bridgeport Conn, will erect at an early day a new wire and tube mill adjoining their present buildings. It will be of brick, 40 x 200 feet, and three stories in hight.

The following table, from the Marquette (Mich.) Mining Journal, exhibits in gross tons the total lake shipments of iron ore from the mines of the Marquette and Menomince ranges for the current season up to and including Wednesday, the 14th, together with the shipments from the same ports for the corresponding period of last

ne/io	Name	В	(ol	p	0	ď	t				-	18	196.		L	1885.	
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	nse Ignace.													21	77	8		,829 ,522
												-	-	950	,190	2	805	492

The increase in lake shipments from the morning, the 20th inst., entailing a loss of Machine Works, which did excellent work, changed the direction of the orders, however.

The Pond Engineering Company, of St. Louis. Mo., have been awarded the contract of company of St. Louis. Mo., have been awarded the contract of company of St. thrown out of complexity or the contract of company of St. thrown out of complexity or the contract of company of St. thrown out of complexity or the contract of company of St. thrown out of complexity or the contract of company of St. thrown out of complexity or the contract of company of St. thrown out of complexity or the contract of company of St. thrown out of complexity or the contract of company of St. thrown out of complexity or the contract of company of St. thrown out of complexity or the contract of company of St. thrown out of complexity or the contract of company of St. thrown out of complexity or the contract of company of St. thrown out of complexity or the contract of company of St. thrown out of complexity or the contract of company of St. thrown out of complexity or the contract of company of St. thrown out of company of St. 7410 gross tons more than they had shipped at the corresponding date last year. Adding to these amounts the output of the Gogebic mines to date of the 14th, and we find that the gain for this season over that of 1885 at the same stage is 367,905 gross

> Fire-brick is a commodity in the manufacture of which notable progress has been made at Birmingham, Ala. Not long since every brick that went into a furnace stack or stove in the Birmingham district came from the North. Now the Birmingham Fire-Brick Works, which commenced operations about a year and a half ago, sell to all but one of the concerns now making iron, and have orders from nearly all of those that are building. Their brick, it is said, has been tested with satisfactory results at as high a temperature as 2400°, while at average furnace and rolling-mill heats their staying quali-ties have been proved.

Turning out brick at the rate of 6,000,000 a year, the works are still considerably behind in their or-The bulk of their

Hardware Novelties.

The Universal Wagon Jack.

The accompaning illustrations, Figs. 1 and 2, represent this article, which is made by the American Tool Company., Cleveland, Ohio, under a patent May 4, 1886. Fig.

1 shows the jack lowered and Fig. 2 shows coming unscrewed and lost, and in such a

when a change is made only two screws need be removed to accomplish it. The handles and tip are of rubber, finely checkered. The skeleton breach is held in place by a dowel pin at the top of its bear-ing surface and the attaching screw at the base. This screw is a knurled thumb screw,

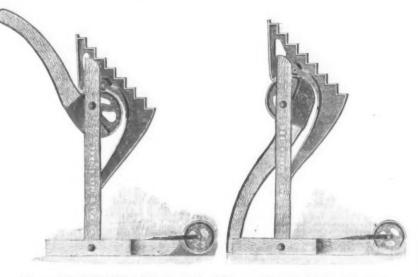


Fig. 1.—Universal Lifting Jack, Lowered. Fig. 2.—Universal Lifting Jack, Raised.

recognized as effectively applying the power.

The step bearings are for the purpose of allowing the instant spplication of the jack to vehicles whose axles are at various heights. The roller, as shown in the cut, is referred to as giving a wheelbarrow motion for rapid and easy transfer to any place or position. The simplicity and strength of this article are alluded to by the manufacturers, who also make the point that there are no ratchets or pawls in its construction, and that it sustains the load raised at any point. Its lifting capacity is stated to be 1500 pounds.

Adjustable Cover.

Topliff & Ely, Elyria, Ohio, are manufacturing an adjustable cover the special features of which are shown in the annexed illustrations. The object of the invention is



Fig. 1 .- Cover, Full Size.

to furnish a cover that will fit different sized will be completed by January 1, if not articles. In order to accomplish this the sooner. The works will have a capacity of cover is made as represented, Fig. 1 showing the cover at its largest adjustment and Fig 2 showing it when contracted to its smallest size. With this arrangement the covers contract about 2 inches, so that a 10-inch cover will fit boles from 8 to 10 inches in diameter. Where the pot flares so that the



Fig. 2.—Cover Contracted.

spring of the cover would tend to throw the cover out there is, it will be observed, a little hook to hold the cover at any size de-

The Peerless Target Pistol.

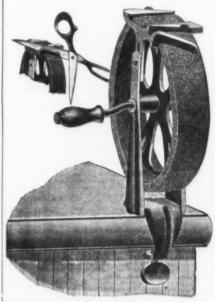
This article is manufactured by the Bay State Arms Company, Uxbridge, Mass., for whom John P. Moore's Sons are agents, 302 Broadway, New York, and is, it will be per-ceived, in its action practically the same as angle against the surface of the emery and ceived, in its action practically the same as their rifles. It has a rebounding lock and a vertical sliding breach block, operated by the guard, as a lever, which when thrown down ejects the empty shell from the chamber and with self-ideal response to exercise the empty shell from the chamber and with self-ideal response to exercise the empty shell from the chamber and with self-ideal response to exercise the empty shell from the chamber and with self-ideal response to exercise the empty shell from the chamber and with self-ideal response to exercise the empty shell from the chamber and with self-ideal response to exercise the empty shell from the chamber and with self-ideal response to exercise the empty shell from the chamber and the self-ideal response to exercise the self-ideal response to exercise the self-ideal response to exercise the self-ideal response to the self-ideal response to the self-ideal response to the self-ideal response to exercise the self-ideal response to ber, and with sufficient force to carry it, it is intimated, 6 or 8 feet from the shooter. The importance of this feature is alluded to as permitting very rapid firing. The barrel is fastened to the frame by a tapering screw key, easily removed by the hand, which engineer, recently obtained a patent for pro-passes through the frame and rection of the pelling vessels and rendering invisible the

it raised. The lever, it will be seen, works in and against a rolling bearing, and will be recognized as effectively applying the power.

The step bearings are for the purpose of long for the trade, and different sizes and long for the trade of the long for the lon lengths made to order as desired. They will finished either in nickel plate or case hardened, as ordered. Attention is called to the fact that the facility with which the barrel and skeleton breach can be detached permits the pistol to be packed in a very small space.

The Household Emery-Wheel Knife-Sharpener.

The Crystal Emery Wheel Company, Northampton, Mass., manufacture and offer to the trade the Household Emery-Wheel Knife-Sharpener, the patent for which was but recently granted. The construction and operation of the device is so clearly indicated in the accompanying illustration that but a brief description is necessary. The wheel, which is 6 inches in diameter. is



The Household Emery-Wheel Knife-Sharpener.

fastened to a table by means of a clamp and thumb-screw and is turned by an or-dinary crank. The center of the wheel is dinary crank. The center of the wheel is of cast iron, and the rim, which is r inch broad is of solid emery. The wheel is for sharpening knives, scissors, and other cutting implements, and being of emery the grinding is done without water. The adjustable table with a guide, as shown in the cut, is referred to as a great convenience, for it enables those who are not familiar with the use of a sharpening wheel to hold it will be noticed, may be raised or lowered by turning a screw, and may be removed entirely if desired. The smaller cut at the entirely if desired. left shows the position in which the seissor blade should be held for sharpening.

Mr. Thorsten Nordenfeldt, the well-known



Sebastopol and other Black Sea ports are now protected by an electric apparatus placed in the sea to destroy hostile torped-boats. The construction of the apparatus, which is the work of American engineers, has been kept secret.

pin sufficient in extent to strike either on the different in the center of any cartridge used. Through the boiler and forcing it into the rim or in the center of any cartridge used. Through the boiler and forcing it into the rim or in the center of any cartridge used. Through the boiler and forcing it into the rim or in the center of any cartridge used. Through the boiler and forcing it into the rim or in the center of any cartridge used. Through the boiler and forcing it into the rim or in the center of any cartridge used. The smoke in its passage upward through the water, being sufficiently subdivided, becomes washed, its solid particles justed for that size. A tip or forcend and extractor go with each extra barrel, and dered invisible, or nearly so.

ders The bulk of their product is sold near home, though they now have sales agents in most of the leading cities of the North. The clays are not found near Birmingham, but are carried from long distances.

barrel laterally, keeping the barrel always in its proper position, and by its taper shape compensating for any wear of surface. The patent breach block is so constructed that a lateral motion is obtained by the firing pin sufficient in extent to strike either on the content of any contrider used.

July 28, 1886. Hardware Prices

HARDWARE.

HARDWARE.
Ammunition. Caps. Percussion, \$ 1000— Hicks & Goldmark's
F. L. Waterproof, 1-10's
G. D
A mmunition. Cags. Percussion, # 1000— H. R. Goldmark's H. L. Waterproof, 1-10's
Eley's D Waterproof, Central Fire
Blank Cartridges, except 22 and 32 cal., an additional 10 \$\frac{1}{2}\$ over above discounts. Blank Cartridges, 22 cal\$1.50, dls 2 Blank Cartridges, 32 cal\$3, dls 2 Primed Shells and Bullets
B. B. Caps. Round Ball
All other Primers, an sizes
Shell— Paper Shot Shells, 1st & 2d or S. G. qual.dis 2\(^k\)&5\(^k\)\$ Sefbold's Combination Shot Shells
ads = (1, M, C, & W, R, A, -B, E, 11 up \$2.00) (1, M, C, & W, R, A, -B, E, 9&10 2.30) (1, M, C, & W, R, A, -B, E, 7&8, 2.60) (2, M, C, & W, R, A, -P, E, 11 up. 3.10) (1, M, C, & W, R, A, -P, E, 9&10 4.00) (1, M, C, & W, R, A, -P, E, 7&8 490) (2, M, R, E, 11 up 5, 12 490) (3, M, R, E, 11 up 5, 12 490) (4, M, R, E, 11 up 5, 12 490) (4, M, R, E, 11 up 5, 12 490) (4, M, R, E, 11 up 490) (4, M, R, E, 11 up 490)
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set, 32% quarters, No. 5, 50; No. 34, 34. dls 20; Lewis' Patent Single Twist. dis 45; Russell Jennings' Augers and Bits. dis 25; Imitation Jennings Bits. dis 26; 26; 26; 26; 26; 26; 26; 26; 26; 26;
French, Swift & Co. Connecticut Valley Mfc. Co. Sneil's. Cook's, Douglass Mfg. Co. Cook's, Douglass Mfg. Co. Cook's, New Haven Copper Co. dis 50&10&50&10&50 Cook's. New Haven Copper Co. dis 50&10&50&10&50 Testent Solid Head. S. E. Jennings & Co., No. 10, extension lip. dis 40 C. E. Jennings & Co., No. 10, extension lip. dis 40 C. E. Jennings & Co., No. 30. West, 32% quarters, No. 5, 85; No. 30, 43 Lewis' Patent Single Twist. Gis 45 Russell Jennings' Augers and Bits. Gis 45 Russell Jennings' Augers and Bits. Gis 45 Car Bits, Snell Mfc. Co. Car Bits, New Haven Copper Co. Gis 40&10 L'Hommedieu Car Bits. Gestle Mfc. Co.'s Jennins' Bits (new Hist). Gis 50&10 L'Hommedieu Car Bits. Gestle Mfc. Co.'s Jennins' Bits (new Hist). Gis 50&20 Forstner Pat. Auger Bits. Gis 10 Hollote Augers. Gis 10 Hollote Augers.
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-	Socket Framing and Firmer— Witherby and Douglas. P. S. & W. New Haven and Middlesex. Buck Bros. Merrill. 11: 402-102-10	N. W.
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	Providence Tool Co.'s Wrought Iron .dis 25	****
	Carriage Makers', Sargent's .dis 60%&10. Eberhard Mfg. Co .dis 40% 66 40&10. Warner's .dis 40%10 Saw Clamps .see Vise CHps. .see Vise Axie and Spring Bar, Norway Iron .dis 65&2	
-	Saw Clamps. See Vise Clips. Axie and Spring Bar, Norway Iron. dis 65&2 Common Axie Clips. dis 70 Wrought-Iron Felloe Clips. \$\psi\$ 55 Steel Felloe Clips. \$\psi\$ 55 Clocks Prass. Lardware list. dis 550 Cocks. Brass.	MARK
	Coffee Mills Board and Box dis 45&10&2; Belson's Patent 95,50, \$10,50, dis 25; American, Enterprise Mfc. Co. dis 90&10&30; The "Swift," Lane Bros. dis 20&10; Webb's Patent.	
	Compasses. Dividers. &c. Compasses, Calipers, D'viders. dis 70@70&10 Bemis & Call Co.'s Dividers. dis 60&5 Bemis & Call Co.'s Compasses & Calipers. dis 50&5 Bemis & Call Co.'s Wing & Inside or Outside.dis 50&5 Bemis & Call Co.'s Double.	
	Bemis & Call Co.'s (Call's Patent Inside). dis 30 Excelsior. dis 50 Cook's Extension. dis 20 dis 20d5 J. Stavens & Co.'s Calipers and Dividers. d's 25&10 s Dradley's.	-
	Barton	-
	Steel Pelloc Cips	
	Wadsworth's. dis 25 g Cradies. dis 40&5&2 g Grain. dis 40&5&2 g Crow Bars. Cast Steel. p 3 34 g Curry Combs. Fitch's dis 50&10 @ 50&10&10 g Rubber. p 400 \$10,00 dis 25 a 30 g Perfect. dis 50 g Silvered Glass. net White Enamel nes	
-	Number	
13	Beaver Falls and Booth'sdia 331/4 %	1
1	Dividers	
TOWP CH	Brass. Pope & Stevens' Het.	
[8	shaw Door Check and Springdia 25 🖨 30 🖷 35 🕏	1
一 田の田の田	Elliott's Door Check and Spring	SOEU .F
HAY EN	final fina	100
EEEEBBB	Drills and Drill Stocks.	CHTEDT
		C VAR
A	utomatic Boring Tools each, \$1.75 @ \$1.85 soist Drille	RLTVSF
P	Drill Bits.—See Augers and Bits. Drill Chucks.—See Chucks. Dripping Pans. er b	ARPP
NESK	Reaters	HIFHASG
TAABA		000000
K	Electric Hell Sets.—Wollensak's	HHHYU
	Manager 1 and 1 and 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	10

	ourront mare	ware indee,	July 20, 1000
	Belting. Rubber.	Mystic. # doz \$17.00 Cottage. # doz \$15.00	Rucets.
	Standard. dis 70&5 @ 70&10 %	Cottage	Faucets. dis 40 g Fenn's cris dis 40 g Bobren's Patent Rubber Ball dis 25 g Fenn's Cork Stops dis 303 g Star dis 60 @ 60 g Frary's Patent Petroleum dis 40 k10 k2 g West's Patent Key dis 50 g Anghor Lock dis 50 g
	"leveland Rubber Co., Extra., dis60&10% Bench Stops.	Weed Improved.	Frary's Patent Petroleum. dis 40&10&2 3 West's Patent Key dis 50 %
	Second Nation	Hub	Amelon Leon
25	## dos ##-dis ou ## dos #		J. Sommer's Cork Lined, 1st quality dis 50 s J. Sommer's Diamond Lock dis 40 s
28	* \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Shallow Socket 1886, dis 50&10 %	J. Sommer's Cork Lined, 185 quality
25	Blind Adjusters.	Valo Contain the Star 1981	
.45	Washburn's Self-Locking dis 20 @ 20&10	Tale, Casters, Hist May, 1898 Gis 20041002002004100200400400040	Best brands, list Dec. 1, 1885dis 60&10@60&10&5 \$ Lower Grade, list Dec. 1, 1885dis 70@70&5 \$ J. B. Smith Co. Screw Tangdis 55&10@55&10&10 \$ New Am. File Co. Pat. Tapersdis 18 50 \$ Heller's Horse Raps
.56	an Sand's Screw Pattern \$15 \$ grodis 50&10	Stationary Truck Casters	New Am. File Co., Pat. Tapers
&2 &2 &2	Vashburn's Old Pattern by F gro. ne ferriman's hew list, ne lalishury & Austin No. 2008. \$9 \$ gro. ne	Cattle Leaders. Humason, Beckley & Co.'s. dis 75 \$ Sargent's dis 60%&10 \$ Hotchkiss dis 30 \$ Peck. Stow & W. Co. dis 50&10 \$ \$ Peck. Stow & W. Co. dis 50&10 \$ \$ Peck. Stow & W. Co. dis 50&10 \$ \$ Peck. Stow & W. Co. dis 50&10 \$ \$ Peck. Stow & W. Co. dis 50&10 \$ \$ Peck. Stow & W. Co. dis 50&10 \$ \$ Peck. Stow & W. Co. dis 50&10 \$ \$ Peck. Stow & W. Co. dis 50&10 \$ Peck. Stow & W. Co. dis	J. & Riley Carr List, April 1, 1883, dis 15 & J. & Riley Carr Horse Rasps
%2 %2 ddi	Courity Gravity	Chain. Trace, 61-10-2. Eng. sizes Ppair 79# dis 50&10 @	Heller Horse Rasps
2 2 2	i Diocha.	Trace, 64-10-2, Eng. sizes * pair 79# dis 50&10 @ trace, 64-10-3, Eng. sizes * pair 70# do 5 trace, 7-10-2, Eng. sizes * pair 80# do 5 trace, 7-10-2, Eng. sizes * pair 80# do 5 trace, 7-10-2, Eng. sizes * pair 80# do 5 trace, 7-10-2, Eng. sizes * pair 80# dis 50&10 @ 5 trace, 7-10-2, Eng. sizes * pair 80# dis 50&10 @ 5 trace, 7-10-2, Eng. sizes * pair 70# dis 50&10 @ 5 trace, 7-10-2, Eng. sizes * pair 70# dis 50&10 @ 5 trace, 7-10-2, Eng. sizes * pair 70# dis 50&10 @ 5 trace, 7-10-2, Eng. sizes * pair 70# dis 50&10 @ 5 trace, 7-10-2, Eng. sizes * pair 70# dis 50&10 @ 5 trace, 7-10-2, Eng. sizes * pair 70# dis 50&10 @ 5 trace, 7-10-2, Eng. sizes * pair 70# dis 50&10 @ 5 trace, 7-10-2, Eng. sizes * pair 80# dis 50&10 @ 5 trace, 7-10-2, Eng. sizes *	Knox, 4½-inch Rolls
2	Reea Mrg. Co. Self-Lubricatingdis 50	Log, Fifth, Stretcher, and other rancy Chains, inst Nov. 1, 1884	Eagle, 5½-inch Roll 2.85, dis 35 % Crown, ½½ in., \$3.50; 6-in., \$4.00; 8-in., \$6.50 each, dis 35 % Crown Jewel. 6-in., \$3.50 each, dis 35 %
or 2		German Coll, less than cask lots, and 46 % b. German Coll, list of June, 1881	American, 5-in., \$3; 6-in., \$3.40; 7-in., \$4.50 each, dis 35 % Domestic Fluter. \$1.50 each, net Geneva Hand Fluter. White Metal. \$2,50 \$12.58; 25 %
82	Door and Shutter— Jast Iron Barrel, Square, &c. dis 70 @ 70&5 Last Iron Shutter Boits dis 70 @ 70&5 Cast Iron Chain (Sargent's list) dis 70 @ 70&5 Cast Iron Chain (Sargent's list) dis 70 @ 70&5 Wrought Barrel dis 70 @ 70&5 Wrought Square dis 70 @ 70&5 Write Shutter all Iron, Stanley's list dis 70 @ 70&5 Wr't Shutter, Brass Knob, Stanley's dis 70 @ 70&5 Wrought Square dis 70 @ 70&5 Wr	Covert Haiter, Hitching and Breast. dis 50&2 \$ Covert Traces dis 40&2 \$ Covert Traces dis 4	Crown Hand Fluter, Nos. 1, \$15; 2, \$12.50; 3, \$10.dia 30 \$, Shepard Hand Fluter, No. 85 \$4 doz \$15.30, dia 40 \$, Shepard Hand Fluter, No. 110 \$4 doz \$11. dia 40 \$.
12 1	Wrought Square. dis 70 @ 70&5 Wr't Shutter, all Iron, Stanley's list. dis 60&10 Wr't Shutter, Prass Knob Stanley's dis 40&10	Jack Chain, Brass	Crown Hand Fluter, No. 8.1, \$15.1 %, \$12.00 \cdot 3. \$10.01 \$3.0 \cdot 3. \$10.01 \$3.0 \cdot 3. \$15.30, \dis 40 \cdot 5. \$15.30, \dis 40 \cdot 5. \$15.30, \dis 40 \cdot 5. \$11. \dis 40 \cdot 511. \dis 40
k2 5	Wrought Shutter, Sargent's list dis 60&10 Wrought Shutter, Sargent's list dis 56&10 Wrought Sunk Flush, Sangent's list dis 56&10 Wrought Sunk Flush, Stanley's list dis 40&105 Wrought B. K. Flush, Com'n Stanley's list dis 56&10	White	Buffalo Polasors P dos \$10.00 dis 10 % Fluting Scissors dis 45 %
t2 9	Wrought B. K. Flush, Com'n Stanley's list. dis 55&10; Carriage—	Red	Powler
	Genuine Eagle, list Oct., 84	Chalk Lines.—See Lines. Cherry Seeders	Hay, Manure, &c. Asso. list dis 60&10&10 \$ Hay, Manure, &c., Phila, list dis 60 @ 60&5 \$ Plated, see Spoons.
2.80			Hay, Manure, &c., Phila. list
25 1		New Haven and Middlesex) Buck Brosdis 30 \$ Merrildis 30 \$10.81	Henis. Pgross \$45, \$4 doz \$4 @ \$4.50 Pry Pans.
	Am. S. Co., Norway, Ph'l., list Oct. 16, '84	L. & I. J. White	Central Stamping Co.'s listdls 359,823
366	R. & W., Philadel, list Oct. 16, 1884 dis 80&5 9 R. & E. Mfg. Co dis 80&10	Tanged Firmers, Spear & Jackson's. \$5.00 to & Tanged Firmers, Buck Bros. dis 30 \$	Sidney Shepard & Co. dis 40×2× Acme dis 60 × Iron Clad Mfg. Co.'s list dis 70 × No. 0 2 8 5 5 5 1 1 1 1 1 1 1
25 %	41-70	Morse's Adjustableeach, \$7.00. d's 20 @ 20&5 \$ Danburyeach \$0.00 dts 20 @ 20&5 \$	0 1 2 8 4 5 9 7 9 dos\$3,00 3.75 4.25 4.75 5.25 6.00 7.00 8.00 9.00
	Stove	Syracuse, Balz Pat	Cauges .
0 %	Machine dis 80 t Boit Ends dis 80 t Berax \$ 5846 @ 8%	Syracuse, Balz Pat. dis 20 5	Wire, Morse's
5 %	Berns Machines Without Augers Upright	Adjustable, Hammer's	Nail and Spike
0%	Snell's, Rice's Patent	Carriage Makers', Sargent's	Double Cut, Shepardson's dis 45 % Double Cut, Ives' dis 50 %
0 %	Phillips Pat, with Augers 7.00 7.50 net	Baw Clamps	Olue I ots.
0 % 5 %	Snell's, Rice's Patent	Common Axle Clips	Wire. Brown & Sharpe's. dis 10 % Gimlets. Asil and Spike. dis 80&10&5 % Eureks "Gimlets. dis 40&10 & 5 % Diamond "Gimlets. dis 40&10 & 5 % Double Cut, Shepardson's dis 40&10 & 5 0 bouble Cut, Shepardson's dis 40 & 5 0 bouble Cut, Free! dis 50 & 5 0 bouble Cut, Free! dis 50 & 5 0 bouble Cut, Free! dis 50 & 5 0 bouble Cut, Free! dis 20 & 6 & 6 & 6 & 6 & 6 & 6 & 6 & 6 & 6 &
0%	Peck. Stow & W. Co	Cockeyes. dis 50 %	Reading Hardware Co
0 % 5 %	Rackus, Nos. 110 to 114 and 31 to 33dis 60&5@60&10 & Backus, Nos. 6, 8, 12, 14	Hardware list	Halters.—Covert's Pat. 16 Jute dis 50&10&2 4
@	Barber's, Nos. 10 to 16	Seisor's Patent. 19.50, \$10.50, dis 20 5 American, Enterprise Mfg. Co. dis 20£10630 5 The "Swift." Lang Bros. dis 20£106410 5	Covert's Hemp Horse and Cattle Tiedis 50&10&2 \$ Covert's Jute Horse and Cattle Tiesdis 60&2 \$ Mencely's Pat. Adjustable Hempand Jute, dis 50&10 \$
5 %	Spofford's	Webb's Patent. dis 45 Compasses. Dividers. dc. dis 70070410 Compasses. Calipers. Dividers. dc. dis 70070410 Compasses. Calipers. Dividers.	Halters.—Covert's Pat. 14 Jute dis 50&10&2 \$ Covert's Hamp Horse and Cattle Tie dis 50&10&2 \$ Covert's Hamp Horse and Cattle Ties dis 60&20&2 \$ Covert's Jute Horse and Cattle Ties dis 60&20 \$ Mencely's Pat. Adjustable Hempand Jute, dis 50&10 \$ Mencely's Hemp and Jute Horse and Cattle Ties dis 50&10 \$ Hammers. Maydole's List Dec. 1, 1885, dis 26 & 25&10 \$ Chency's new list. March. 1883. dis 20&10 \$ Garden's new list. March. 1883. dis 20&10 \$ Garden's new list. March. 1883. dis 20&10 \$ Garden's new list. March. 1885. dis
0%	Ives' Novelty, Improved	Bemis & Call Co.'s Dividersdis 60&5 % Bemis & Call Co.'s Compasses & Calipersdis 50&5 % Bemis & Call Co.'s Wins & Inside or Outside dis 50&5 %	Maydole's
0 %	Bartholomew's, Nos. 25. 27. 30018 50&10@50&10&10 & Bartholomew's, Nos. 117. 118, 111	Bemis & Call Co.'s Double	Buffalo Hammer Co
0 %	Amidon's Ratchet	Cook's Extension. dis 20 @ 20&5 % J. Stevens & Co.'s Calipers and Dividersd's 25&10 % Coopers' Teels	Verree. dis 5 % Magnetic Tack, Nos. 1,2,8,\$1.25, 1.50 and 1.75.dis 30&10 % Naison Tool Works.
2	Braces. Rackus, Nos. 110 to 114 and 31 to 33. dis 60&5@60&10 8 Rackus, Nos. 6, 8, 12, 14 dis 60&10&5 60&10 8 Rackus, Nos. 16, 18, 30, 29, 7, 9, 11 dis 70&10&5 Barber's, Nos. 30 to 55 Barber's, Nos. 30 to 55 Barber's, Nos. 30 to 55 Barber's, Nos. 40 to 65 Uses' Novelty Vee' New Haven 1 dis 6&5 6 60&10 5 Vee' Novelty Lee' Novelty Lee' Novelty Lee' Novelty Brackets Amidon's Barker's imp'd 1 dis 6&6 66&5 5 Amidon's Barker's imp'd 1 dis 6&6 60&10 5 Amidon's Barker's imp'd 1 dis 60&10&5 5 Amidon's Barker's imp'd 1 dis 60&10&5 5 Amidon's Universal 2 Amidon's Barker's imp'd 3 Amidon's Barker's imp'd 4 Barker's imp'd 4 Barker's imp'd 4 Barker's imp'd 4 Barker's imp'd 5 Amidon's Barker's imp'd 5 Amidon's Barker's imp'd 5 Amidon's Barker's imp'd 6 Barker's imp'd 8 Barkerts 8 Barkerts	Bradley's	Warner & Nobies
55	### ### ##############################	heatty'sdis 25 %	Nelion Tool Works
0 % 0 %	Reading, Rosettedis 65&10 @ 65&10&10 \$ Bright Wire Goods. Regular list	Corkscrews. Humason & Beckley Mfg. Co dis 40 @ 40&10 s Clough's Patent.	Hand Cuffs and Leg Irons. Providence Tool Co., Hand Cuffs, \$15.00 \(\psi\) dozdis 105 Providence Tool Co., Leg Irons, \$25.00 \(\psi\) dozdis 10 \(\si\)
3%	Breilers. Henis' Self-Basting Inch 9 10 9 x 11 Per dos \$4.50 5.50 6.50 Buckets.—See Well Buckets and Pails.	Sandusky Tool Co. dis 30 @ 30&5 % Corkscrews Humason & Beckley Mfg. Co. dis 40 @ 40&10 % (October Pros. & Hulbert. dis 33½ @ 333&65 % Howe Pros. & Hulbert. dis 35 % dis 10 % Madsworth % dis 10 % Wadsworth % dis 25 % Cradles. dis 25 %	Tower's dis 35 % Daley's Improved Hand Cuffs: 2 Hands, Polished, \$\psi\$ dos, \$45; Nickeled, \$67; 3 Hands, Polished, \$\psi\$ dos, \$72; Nickeled, \$84
XX	Buckets,—See Well Buckets and Pails. Buil Kings. Union Nut Co	Wadsworth's dis 25 \$ Cradles dis 25 \$ Cradles dis 40&5&2 \$ Crow Bars dis 40&5&2 \$ Crow Bars dis 40&5&2 \$ Crow Bars dis 50&10 @ 50&10&10 \$ Curry Combs fitch's dis 50&10 @ 50&10&10 \$ Curry Combs dis 50 \$ Cu	doz, \$72 : Nickeled, \$84dis 20 \$ Handles. From, Wrought or Cast.—
×	Buil Kings.	Crew Bars. Cast Steel. Lron. Steel Points. P B 314 2 314	Handles. from Wrought or Cast.— Door or Thumb. 2 3 4 Fer dos. 10.00 1.00 1.85 1.50 dis 60&10&10 State 1.50
*		Curry Combs. dis 50&10 @ 50&10&10 \$ 80 & 50 & 50 & 50 & 50 & 50 & 50 & 50 &	For dos. 1.00 1.10 1.10 1.00 1.00 1.00 1.00 1.
*	## Bruss	Perfect. dis 50 % Curtain Pins. dis 50 % Silvered Glass. net	no Plate, \$0.88. Bet Barn Door dis 10&10 \$ Chest and Lifting dis 70 \$
et	### Wrought Brass	White Enamel net Cutlery. dis 3:1½ ≤ Beaver Falls and Booth's. dis 3:1½ ≤ Wostenholme. \$7.75 ⊕ \$8.00 to £	Saw and Planedis 40&10 \$
5	Fast Joint, Narrowdis 60&5 @ 60&10&5 %	D4-14-re. See Corposes	Hammer, Hatchet. Axe, Sledge. &c. dis 25 (a) 90 g Brad Avi Pgross \$2,00 l Blckory Firmer Chisel, assorted. \$\Pi\$ gross \$4,00 l Blckory Firmer Chisel, large. \$\Pi\$ gross \$0.00 kg Apple Firmer Chisel, assorted. \$\Pi\$ gross \$0.00 kg Firmer Chisel, assorted. \$\Pi\$ set \$1.00 net Firmer Chisel, assorted.
*	Loose Joint. Loose Joint. Japanned. Loose Joint. Jap. with Acorns. Parliament Butts. dis 70&10@70	Embossed Glit, Pope & Stevens' listdis 30&10 \$	Apple Firmer Chisel, assorted
* * *	Parliament Butts	Leather, Pope & Stevens' list	Socket Framing Chisel, assorted gross 5.00] J. B. Smith Co.'s Pat. File
8	Loose Pin, Acorns, Japanned Loose Pin, Acorns, Jap, Pitd. Tips	Brass, Fode & Stevens* list	Auger, assorted. # gross 5.00 40&10 \$ Auger, large. # gross 7.00 40&10 \$ Patent Auger, lves'
N N	#rought from— Past Joint Narrow	Gem (Coil), list April 19, 1886	Patent Auger, Douglass
1	Table Butta Back Flaps. &c. dis 65&2 \$ Inside Blind. Regular. dis 65&2 \$	Champion (Cott)	Tross Cut Saw Handles— Atkins' No. 1 Loop. & pair. 30¢; No. 3, 22¢; No. 2 and No. 4 Reversible, 22¢. Boynton's Loop Saw Handles
*	Loose Pin, Light	Rubber, complete	
00	Bronzed Wrought Butts	Elliott's Door Check and Springdis 25 s Prawing Knives. Witherby and Douglas	Hangeroold patterns d's 60&10&10 @ 70 g
18	Bited Butts	Drawing Knives.	Hamilton Wrought Wood Track. dis 55 g J. S. Wood Track. dis 65 g Dannillon dis 65 g
22.4	Huffer. Nos. 1, 3, 5, dts 80&5 68 80&10 8	Watrous. dis 15&10 @ 26 % L & L J. White. dis 20&5 % Bradley's. dis 35 %	Rider and Wooster, Medina Mfg. Co.'s listdis 70 %
0	All	Adjustable Handle	enith for Wood Track. dis 55 5 6 6 6 1 steel Arm. dis 40 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
* *	55	Blacksmiths'each, \$1.50 @ \$1.00 Blacksmiths' Self-Feedingeach, \$7.50 dis 20 \$	tering improved (Anti-Friction)
×	Shepard's Steamboat Gravity, No 10.dis 80&10&216 \$ Shepard's "O. S." and "Acme" Lull & Porter	Drills and Drill Stocks	Cartilla
5	Shepard's "Queen City" Reversible dis 75&10 % Clark's Improved Shutter Hinge, Nos. 0, 1, 114, 2,	Ratchet, Merrill's dis 20 % Ratchet, Ingersoil's dis 25 % Ratchet, Parker's dis 25 %	verry's Patens \$\psi\$ dos. pr., \$\frac{36}{10}\$ in. \$10 : 5 in.
8	North's Automatic Blind Fixtures, No. 2, for Wood, \$10.50; No. 3, for Brick, \$13.50dis 25&2 \$	Ratchet, Weitney's dis 204:10 \$ CRatchet, Weston's dis 204:10 \$ CRatchet, Weston's dis 204:25 \$	ronk's PatentNo. 4, \$12; No. 5, \$14.40; No. 6, \$18 \$ 5
×	Butcher's Cleavers. Humason & Beckley Mfg. Co	Whitney's Hand Drill, Plain, \$11.00; Adjustable. A	Vood Track. Fon Chad. Fr. Se. dis 3000 \$ 50010 \$ 1. rchitect. Feb. 20 \$ 20 \$ 20 \$ 20 \$ 20 \$ 20 \$ 20 \$ 20
×	Beatty's	Wilson's Unit Stocks	el'1. Lichards', (lots of 50 sets dis 20&10&10 \$), dis 20&10 \$ ane s Steel Anti-Friction
	New Haven Edge Tool Codis 40 & Albertson Mfg. Codis 38½ @ 38½85 £	Standarddis 50&10 % v	Varner's Patentdis 20@20&10 \$ 3
2	Calipera.—See Compasses. Can Openera. Messenger's Comet	Treist Drille	tearner Anti-Fricton dis 20 de 20x10 3 de autillese aultiese dis 40 de 00x5 5 de 00x5 5 de concretan merican \$\psi\$ act \$\phi\$; dis 20\xeta10 \$ de docto \$\phi\$ de docto \$\phi\$ de docto \$\phi\$ de docto \$\phi\$ de aragon, Nos. 1, 2 and 3. \$\phi\$ act \$\phi\$; dis 50 \$ de aragon, \$\phi\$ dis 50 \$ de aragon, \$\phi\$ s. 4, 5, 5\phi\$ and 6.
8		Dripping Pans. Per b	Aragon, Nos. 4, 5, 54 and 6
£ 5	No. 4. French	Egg Beaters.	aragon, Nos. 4, 5, 5% and 6
	Sardine Scissors	Family T. & S. Mfg. Co.).	note have a second of the seco
2 2 2	World s Best, # gross, No. 1, \$12.00; No. 2, \$24.00; No. 3, \$36.00	Acme	erman, old list
	Domestic. \$\P\$ doz \$2.50, dis 45 \$\(\) Champion. \$\P\$ doz \$2.00, dis 50 \$\(\) (ards.	Standard Fro. 812.00 Kingston Fro. 82.00 Acme. Fro. 82.00 Advance No. 1. Fro. 810.50 Advance Fro. 82.00 Avree's Spiral Fro. 82.00 Fro. 82.00 Avree's Spiral Avree's	overt, New Patent dis 50e2 \$ Povert New B. E. dis 60e2 \$ Povered Spring dis 60e2 \$ Povered Spring
6	Horse and Currydis 10 @ 10&10 \$	Ayres' Spiral Electric Bell Sets.—Wollensak's	Hatcheta, List Jan. 1, 1886.
	Carnet Mireichers.	46 gr. 150 gr. F.FF. H Kegs. # b.	unt's Broad dis 40 dis
		kers, Ph	Server S
	Bissell No. 5. # dos \$17.00 Bissell No. 7 New Drop Pan. # dos \$19.00 Resell No. 12 Hall Sweeper # dos \$30.00	Ware. Escutcheou Pins. Iron and Brass, list Nov. 11, 1885	eck's. dis 40&10 @ 40&10&5 t T elly's Edge Tool Co. dis 40&10@65 g T en Eyek Edge Tool Co.
	State No. 12 Hall Sweeper	Escutcheous. Door Lock. Same discounts as Door Locks Brass Thread dis 60 @ 60&10 s Wood dis 85 g	eck's dis 40c10 cs 40c10cs 1 religion dis 50c00 cs 40c10cs 1 religion dis 50c00 cs 40c10cs 1 religion dis 50c00 cs 40c10cs 1 religion dis 60c10cs 40c10cs 1 religion dis 60c10cs 1 reli
	ewel	Wooddia %6 \$	Lathing, Nos. 1 2 3 v dos 5.50 6.00 6.50 0

40	Hay Kuives
314	% Gem
&2 50 45	Heath Fatent
10 10	Wrought Iron Hinges— Strap and T
50 40 10	5 Transition 12 in 10 m 3120334
10	14 in. & up. \(\pi \) 2\(\frac{1}{2} \)
634	Rolled Blind Hinges, Nos. 32 and 34
&5 &5	Rolled Plate
10 50 10	Printe Hinges 8, 10 & 12 in., \(\Print \)
15 10	Geer's Spring and Blank Butts
15	American, Gem, and Star, Japanned dis 20 American, Gem, and Star, Bronzed ne
30	Barker's Double Acting
35 35	Bommer's
35	Gate Hings- Western
35 ne 25	
30 40 40	N. Y. State
30	Seymour's
10 4	Reed's Latch and Hinges dos sets \$12, dis 50
1.7	Bondled
10 9	Garden, Mortar, &c. dis 60&10&10 Planter's, Cotton, &c. dis 60&10&10 Warren Hoe. dis 60 Magic. # dos 84.7
£5 9	D. & H. Scovil
169	Maynard, " "dis 60 @ 60&5 5
8	Hubbard & Co.
8 1.25 12 4	Hill's Improved Ringers # doz. \$5.50 @ 5.75 Hill's Old Style Ringers # doz. \$3.25 @ 3.50
0 1 70 1	Hill's Tongs
1,00	Perfect Ringers # dos \$2.50 Blair's Hog Ringers # dos \$2.50 @ 2.75 Blair's Hog Ringers # dos \$1.10 @ 2.75
04	Champion Ringers # doz \$2.25 Champion Rings, Double # doz \$2.25
0 % 5 %	Brown's Ringers. \$\psi \dos, \$1.25 \text{\(\omega}\) 1.35
5 %	Hoisting Apparatus. "Moore's "Hand Hoist, with Lock Brakedis 15 9 "Moore's "Differential Pulley Block
0 %	A CON C.
0 %	Hellew-Ware. Iron- Stove Hollow-Ware, Grounddis 50&5@50&10 s
5 %	Stove Hollow-Ware, Ground
5 %	Kettles dls 50410 s Oval Bollers, Saucepans and Glue Pots dls 30 @ 35 s Grav Enameled Ware dls 40 @ 4025 s Agate and Granite Ware dls 25 % Rustless Hollow-Ware dls 50 @ 5025 g Galvanised Tea-Kettles dls 50 @ 5025 g
0 %	Agate and Granite Waredis 25 % Rustless Hollow-Waredis 50 @ 5005 9 Galvanized Tea-Kettles—
0 4	Agate and Grante ware
2 %	Reed & Barton dis 40 s
0 %	Meriden Brittania Co
0 %	William Rogers Mfg. Codis 50 %
5 %	Cast Iron- Bird Cage. Sargent's list
0 %	Clothes Line. Sargent's list
0 %	Celling, Sargent's list
0 %	Coast From- Bird Cage, Sargent's list. dis 60&10&10 & Bird Cage, Reading. dis 60&10&10 & Clothes Line, Sargent's list dis 60%210 & Clothes Line, Reading list. dis 60%210 & Celting, Sargent's list. dis 60%210 & Rarness, Reading list. dis 60%10 & Cast and list. Sargent's list. dis 60%10 & Coast and list. Sargent's list. dis 60%10 & Wrought from- Cotton. Medical from- Cotton. Medical from-
0 % b	Cotton Pat. W. V. Mallet & Handle Wiks)dis 20 g Cutton Pat. W. V. Mallet & Handle Wiks)dis 20 g Tassel and Picture (T. & S. Mfg. Co.)dis 20 g Wrought Staples, Hooks, &c. See Wrought Goods Beuch Hooks
0%	Wrought Staples, Hooks, &cSee Wrought Goods Bench HooksSee Bench Stops
0 %	Wire Coat and Hat, Gem, list April, 1886dis 45 %
0 %	Belt
	Hush
5#	Wire Screw Hooks and Eyes. See Bright Wire Goods Grass. \$\partial \text{ dots \$\oldsymbol{\text{E}}\) 0.05 \$\oldsymbol{\text{E}}\) 0.00 \$\oldsymbol{\text{B}}\) 0
18	Herse Nails. Nos. 5 6 7 8 9 10 Ausable
8	Clinton, Pl'n. * 5
8	Putnam \$\Pi\$ 27\$ 24\$ 22\$ 21\$ 20\$ 19\$ dia 5\delta 7 \$\text{Vulcan}\$ \$\Pi\$ 26\$ 23\$ 21\$ 20\$ 19\$ 18\$ dia 12\delta \$\text{S}\$
00	Northwest's * > 266 256 236 226 216 206dis 10g16 s Globe > 266 236 216 206 186 186 .dis 10g16 s A. C > 286 256 236 226 216 206dis 25g5 s
10 40	C. BK # 3 28¢ 25¢ 23¢ 22¢ 21¢ 20¢
18	Bridgewater. # b 28e 25e 23e 22e 21e 20e dis 30 g Saranac # b 26e 23e 21e 20e 19e 18e . dis 25 @ 30 g
*	Capeweil
et et	Note.—Concessions on above quotations are fre- quently made. Horse Shoes —See Shoes, Horse.
*	Star
*	Tee Picks, Chisels, &c. American Ice Chisel Pol'd dos \$3.00, dis 20 \$ National Cee Chisel
8	Nove A.y Ice Breakers
A 46 W	Wood Head Picks, Sargent's # dos \$1.00, dis 50&10 \$ Iron Head Picks, Sargent's # dos \$1.25, dis 50&10 \$
MM	lee Malleta, Fick in Bandle
N M M	Acme fee Pick and Tongs # gross \$55.00, dis 50&10 \$ Roger's Lightning fee Chisel
8 M.	ice Tongs. Champion, S. S. & Co
A 16	Jack Screws.—See Screws.
XXX	K ettles. Brass, 7 to 17 in. inclusive
N N	Enameled and Tea Kettles
	Hoys. 1 10 10 10 10 10 10 10
8 8	Ratchet Bed Keys
0	Knite Sharpeners. Parkin's Applewood Handles # doz \$6.00, dis 40 % Parkin's Rosewood or Cocobolo # dos \$9.00, dis 40 %
8	
MMM	Wison's Putcher Knives
MMM	Ames Shoe Knives
as I	Hay and Straw
X	Door Mineral
XX	Door Por. Plated
****	Table and Pocket See Cutlery Knebs Boor Mineral List Dec. 18, 1884, dis Door Por, Jap'd 45&2@45&7½&2 %, but Door Por, Por net Door Por, Plated net Drices are often Door Por, Plated new list dis 25&b@35&10 % Yale & Towne Wood Knobs, list Dec. 1885. dis 40 % Furniture Plain 75 gross incn. dis 10 % Furniture, Wood Screws dis 20&10 & % Base, Rubber Tip dis 70&10&5 Picture, Jud's dis 40&10&10 %
2 2	Furniture Filin 705 gross Inch. dis 10 % Furniture, Wood Screws. dis 20&10 & Euralius 20&10
N N	Ficture, Sargent's
8 1	Garriage, Japanues gross 80s, dis 50&10 5
	Melting, Sargent's
	Holting, Rargent's
8 8	Tubular, Standard No. 0. # dos
	Tubular. Standard No. 1, @ dos 8.25 @ 8 50
1 1 1	Motting, Warners

I.awn Mowers dis 50&5 5 Standard Machines dis 50&10 @ 60 \$ Lemon Squeezers Porcelain Lined No. 1 @ doz \$6.00 dis 25&30 Wood No. 2 @ doz \$6.00 dis 25&30 Wood Ommon @ doz \$1.70 @ 1.75 Dunlap's Improved @ doz \$3.75 dis 20 e Sammis No. 1, \$5 \ 2, \$9 \ 1, 2, \$18 \ \$40z \$2.50 Jennings "Star" @ doz \$2.50 Jennings "Star" @ doz \$2.50 Little Glant Nos. 1, \$\ \$40x \ \$6.50 \ ; \$3.35 \ ; \$3.81.60 Little Glant dis 40&5 \$ \ \$6 \ \$6 \ \$6 \ \$6 \ \$6 \ \$6 \ \$6 \
Lemon Squeezers. Porcelain Lined, No. 1 # doz. \$6.00, dis 25&30 to 25 & 30 de 25 & 30
Wood, No. 2
Sammis'
Dean's
Lines. Cotton and Lines Fish, Draper's
Lines. Cotton and Linen Fish, Draper's dis 60 \$ Draper's Chair dis 60 \$ Draper's Mason's Linen, 34 ft., No. 1, \$1.2 m; No. 2, \$ \$1.75, No. 3, \$2.25; No. 4, \$2.75; No. 5, \$3.25. dis 25 \$ Cotton Chair dis 65 \$
11.75; No. 3, \$2.25; No. 4, \$2.75; No. 5, \$3.25. dis 25 % Cotton Chalk. Cotton Chalk. Silver Lake, Braded, Nos. 0, \$6.00; No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50 % gross. Masons' Linen, No. 36, \$1.50; No. 4, \$2: No. 44, \$2.50 Masons' Linen, No. 36, \$1.50; No. 4, \$2: No. 44, \$2.50 Masons' Colored Cotton. Wire Clothes, No. 18, \$3.75; No. 10, \$3.25; No. 20, \$2.75. Ventilator Cord, Samson Braided, White or Drab Cotton. \$7.50 \(\) doz. dis 20%
Masons Colored Cotton
Cotton
Door Locks, Latches. &c.— List, Dec. 18, 1885.—
Reading Hardware Co. (list Feb. 2 1885)
F. Many's "Extension Cylinder"\$10.50 \(\) doz net Barnes Mfg. Co
Cotton. Padiocks, Cabinet Locks, &c. Locks, Padiocks, Cabinet Locks, &c. Locks, Lasches, &c. List, Dec. 18, 1885. List, Dec. 18,
Romer's Night Latches dis 20 % Yale new list dis 40 % "Shepardson" or "II.S." dis 35 %
"Felter" or 'Amer'can" dis 40&10 % Seed's N. Y. Hasp Lock dis 25 % Cating:
Cooling Gaylord Parker and List March, 84, revised Eagle Jan. 1, 785. dis 4082 Detiz, Nos. 35 to 39.
Deltz, Nos. 51 to 63
"Champion" Night Latches. dis 40 % Yale dis 40 %
Eagle and Corbin Trunk
Pudlocks- Kusseli & Erwin Mallory Wheeler & Co
Nimick & Brittan Mfg. Co Wm. Wilcox & Co Norwich Lock Co
Yale Lock Mfg. Co. 5
Romer's, Nos. 0 to 91
Romer's. dis 25
"Horse Shoe." \$\overline{dis 40}\$ Barnes Mfg. Co. dis 40 \$\overline{dis 40}\$ Nock's dis 30 \$\overline{dis 30}\$
Nock's
Ring Peavies, "Blue Line" Finish
Brown's Patent. dis 25 \$ Scandinavian. new list (low). dis 60 \$ Lumber Tools. Ring Peavies, "Blue Line" Finish. \$ Ring Peavies, "Blue Line" Finish. \$ 0 cm \$20.00 Ring Peaves, Common Finish. \$ 0 cm \$20.00 Ring Peaves, Common Finish. \$ 0 cm \$21.00 Mall. Iron Socket Peavies. \$ 0 cm \$40.00 Cant Hooks, "Blue Line" Finish. \$ 0 cm \$40.00 Cant Hooks, "Blue Line" Finish. \$ 0 cm \$40.00 Cant Hooks, "Blue Line" Finish. \$ 0 cm \$40.00 Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish
Cant Hooks, Common Finish
Finish Cant Hooks, Mail. Socket Clasp Common Finish Finish Cant Hooks, Clip Clasp, "Blue Line" Fin. © dos \$14.50 Cant Hooks, Clip Clasp, "Blue Line" Fin. © dos \$14.50 Cant Hooks, Clip Clasp, Common Finish. © dos \$12.00 Hand Spikes. © dos 6 ft., \$15.00; 8 ft., \$20.00; 8 ft., \$20.00 Fike Poles, Fike & Hook, 12 ft. 14 ft. 16 ft. 18 ft. 20 ft. © dos. \$11.50 12.50 14.50 17.50 21.50 Fike Poles, Pike only, © dos 10.00 11.00 18.00 16.00 90.00 10.00 11.00 18.00 16.00 90.00
Cant Hooks, Clip Clasp, Common Finish. # doz \$12.00 Hand Spikes
dos
Pike Poles not Ironed, \$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
Pike Foles not froned, # 6.00 7.00 9.00 12.00 16.00 Setting Foles, # dos. 14.00 15.00 17.00 wamp Hooks # dos \$18.00 Landing Blocks # dos \$22.50 Landing Blocks # dos \$22.50 Skidding Tongs # dos \$22.50 Skidding Tongs # dos \$26.00 Bended Boot Calks, 1 to 5 M, dis 25 \$; 5 to 10 M, dis 20 \$ Chain Rafting Dogs # 100, med, \$10.00; large, \$12.00 \$12.50 Ring Rafting Dogs # 100, med, \$10.00; large, \$12.00 Lostro # dos \$30.00 Lostro # dos \$31.70 ped \$12.00 \$12.
Skidding Tongs. \$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
Square Steel Boot Calks
Four-ounce bottles w dos, st. 70 ; w are.
Mailets
Mattocks. Regular list
Mattocks dis 60 @ 60&10 %
dos. \$18.00 18.00—dis 45&5 \$ ChampionNos. 200 300 400 400 # dos. \$22.00 400 400—dis 45&5 \$
dbs#21.00 20.00 #0.00 } #5 5
Nos 1 2 8 4B
Nos 10 12 29 33 42
Pennsylvania. 1 8 00 88.00 86.00 28.00
Rach
Kieser's Monarch
Draw Cit
Mincing Knives. Mincing Knives. Am. (2d quality), # gro, 1 blade, \$7; 2 blades, \$12; 3
blades, \$15. dis 20&10 g Lothrop's dos, Single, \$2.00; Double, \$3dis 40&45 g Snaph & Cowles
Diades, si. dis 20210 chrops dis 20210 chrops dis 20210 chrops dis 62,00; Double, \$5. dis 40245 chrops e Cowies
Diades 410 Lothrop's dis 20&10 8mth's \$\psi \ dos, \ \text{Single} \ \text{E.00} \ \ \text{Double} \ \text{\$5} \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
Diades 10 Add 20210
Diagos 10 Alis 2021 2 Alis 2021 2 Alis 2021 2 Alis 10 Alis 2021 2 Alis 10 Alis 1
Diades 10 October Color October Octo
Wire Nails, list April 13, '86
Wire Nalls, list April 13, '86. dis 50-210 2 Wire Nalls, Standard Penny. Weg, card rate, \$3,76 Wire Carpet Nalls. See Tacks Nail Paller. See Tacks Nail Paller. Urtiss Hammer. Wook \$9,00 per Glant, No. 1. Wook \$9,00,00,dis 10 8 dec 80 00 dis 25.
Wire Nalls, list April 13, '86. dis 50-210 2 Wire Nalls, Standard Penny. Weg, card rate, \$3,76 Wire Carpet Nalls. See Tacks Nail Paller. See Tacks Nail Paller. Urtiss Hammer. Wook \$9,00 per Glant, No. 1. Wook \$9,00,00,dis 10 8 dec 80 00 dis 25.
Wire Nails, list April 13, '86. dis 50&104 Wire Nails, Standard Penny. Weg, card rate, \$3,76 Wire Carpet Nails. See Tacks Nail Puller. Curtiss Hammer. Ddos \$90,00,dis 10 \$6 dans No. 1. & dos \$90,00,dis 10 \$6 dans No. 1. & dos \$90,00,dis 10 \$6 dans No. 1. & dos \$90,00,dis 20 \$6 dans No. 1. & dos
Wire Nails, list April 13, '86. dis 50&104 Wire Nails, Standard Penny. Weg, card rate, \$3,76 Wire Carpet Nails. See Tacks Nail Puller. Curtiss Hammer. Ddos \$90,00,dis 10 \$6 dans No. 1. & dos \$90,00,dis 10 \$6 dans No. 1. & dos \$90,00,dis 10 \$6 dans No. 1. & dos \$90,00,dis 20 \$6 dans No. 1. & dos
Wire Nalls, list April 13, '86. dis 50-210 2 Wire Nalls, Standard Penny. Weg, card rate, \$3,76 Wire Carpet Nalls. See Tacks Nail Paller. See Tacks Nail Paller. Urtiss Hammer. Wook \$9,00 per Glant, No. 1. Wook \$9,00,00,dis 10 8 dec 80 00 dis 25.
Wire Nails, list April 18, '86. dis 50&104 Wire Nails, Standard Penny.
Natis Nails, list April 18, '86. dis 50&104 Wire Nails, Standard Penny.
Wire Nails, list April 13, '86. dis 50&104 Wire Nails, Standard Penny.
Wire Nails, list April 13, '86. dis 50&104 Wire Nails, Standard Penny.
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Natis Nails, list April 18, '86. dis 50&104 Wire Nails, Standard Penny.
Natis Nails, list April 18, '86. dis 50&104 Wire Nails, Standard Penny.
Wire Nails, list April 13. '86
Wire Nails, list April 13. '86
Wire Nails, list April 13. '86
Curties Hammer.
Wire Natis, lint April 13, '86 dis 50&10 wire Natis, standard Penny & kes, card race, 63, 76 wire Carpet Natis & 50& Tacks Nati Failer & 50& Tacks Nation &
Wire Nails, list April 13. '86

	Г	E
-	Pinking Irens 9 dos 65¢ ne Pipe, Wrought Iren.	Atkin
	Pinking Irons # doz 65¢ no Pipe, Wrought Iron 14 and under, Plain dis 42% \$ 15 and under, Plain dis 32% \$ 15 and under, Plain dis 57% \$ 15 and over, Plain dis 57% \$ 15 and over, Plain dis 40 \$ Bother Tubes dis 40 \$ Bother Tubes dis 40 \$ 8 bother Tubes dis 52% \$ 1 and over, dis 15 and Plaine Irons dis 15 & 2 \$ 1 and plaine Ir	Atkin W. M. W. M. Peace Peace Peace
-	Bench, First Quality dis 20&2 % Bench, Second Quality dis 25&2 % 5	Peace Peace Richa Richa
-	Fron Planes	Richa Boynt Boynt Boynt
	Davis's fron Planes	Boynt Hack Grif Grif
-	Plane Irons	Star Dian Sav White
	L. & I. J. White	Red, I Saw I Say Stilln Stilln
-	5 in., \$13.50; No.4, 7 in., \$21.00 \$\pi\$ dos dis 20\tilde{2}10\tilde{6}35\tilde{2}2\$ \\ Humason & \tilde{\theta}\text{eckley Mfg. Co. \tag{dis 60 \tilde{8}} \\ Gas Pliers \tag{dis 60 \tilde{8}} \\ Gas Pliers, \tag{dis 60 \tilde{8}} \\ Gas Pliers, \tag{dis 60 \tilde{8}} \\ Gas Pliers, \tag{dis 60 \tilde{8}} \\ dis 60 \tilden	Comn Leach Nash' Hamr
	Humason & Seckley Mfg. Co dis 60 % gas Pilers, Custer's Nickel Plated dis 60 % gas Pilers, Custer's Nickel Plated dis 60 & 5 % Sureka Pilers and Nippers dis 40 & 5 % Sureka Pilers and Nippers dis 42 % Plated dis 25 % Plated dis 26 % dis 10 % Pilated dis 26 % dis 10 % Pilated dis 26 % dis 10 % Plated dis 26 % dis	Hamr Bemis Bemis Bemis
	Standard List. dis 70&10@70&10&10 \$ Disston's dis 45&10 \$ Pocket Levels dis 70&10@70&10&10 \$ Dayis' Inclinometers dis 10&10 \$	Aiker Aiker Hart's Disstantia
	Poppers, Corn. Round or Square, 1 qt	Atkin Atkin Morri Croiss
	Davis Inclinometers	Boyn Sav Atkin
	Vaughan's Post Hole. Auger, per doz. \$22.00. dis 33½ @ 33½ 6 33½ 5 ½ Konler's Little Giant. ₩ doz \$18.00 Kohler's Hercules. № doz \$16.00 № 4 doz \$16.00 № doz \$16.00	Hatch Hatch Union Union
	dis 33½ 65 33½ 65 33½ 65 53 65 65 65 65 65 65 65 65 65 65 65 65 65	Chati Chati Chati Fami
	Fotate Farers. # dos \$5.00 @ 5.50 Antrim Combination. # dos \$8.00 @ 5.50 Antrim Combination. # dos \$8.00 Hossier. # dos \$1.50 Frushing Hooks and Sbears. Disston's Combined Fruning Hook and Saw # dos \$1.50 Disston's Combined Fruning Hook and Saw # dos \$1.50.0. # dos \$1.50.0. # dos \$1.20.0. # dos	Scale Scale Scale Scale
	Disston's Combined Pruning Hook and Saw dos \$18.00.	Box, Box, Deflat Foot.
	Pruning Shears, Henry Pat. # dos \$3.75 @ \$4.00 net Henry's Pruning Shears # dos \$4.25 @ \$4.50 net Wheeler. M. & Co.'s Combination. # dos \$12, dis 20 % Dunlap's Saw and Chis # dos \$8.50, dis 30 %	Ship, Ship, Sci Porte
	J. Mallinson & Co	Scree Ser Doug Disst
	Falleys. dis 66%&10 5 Japanned Screw dis 66%&10 5 Japanned Screw dis 70&10 5 Japanned Side dis 66%&10 5 Japanned Clothes Line dis 66%&10 5 Japanned Clothes Line dis 66%&10 5 Hay Fork, Solid Eye, \$4,00; Swivel, \$4.50 dis 50&10 5 Hay Fork, Solid Eye, \$4,00; Swivel, \$4.50 dis 50&10 5 Line Script Line dis 10% 10% 10% 10% 10% 10% 10% 10% 10% 10%	Disste Buck Stanl Stanl
	Japanned Clothes Line	Sarge Sarge Sarge Knap
	Tackie Blocks Bee Blocks	Knap Knap Sets i Chan Clark
	Custors, Best Makers	Knau Knau Eilric Allar Kolb
	Pitcher Spout, Cheaper Goods	Syrac Sci Wood
	Solid Tinners'	Fla Rou Fla Rou Fla
	### Sliding Door, Wrought Brass # \$ 35¢, dis 20a25 \$ Sliding Door Bronsed Wrt. Iron # foot 7¢ Sliding Door Iron, Painted # foot 4¢, dis 20a1025 \$ Barn Door, LightInch. # foot 4¢, dis 20a1025 \$ Barn Door, LightInch. # foot 4¢, dis 20a1025 \$ Barn Door, LightInch. # foot 4¢, dis 20a1025 \$ B. D. for N. E. Hangers— \$ Small. Med. Large	Mach Fla Rot
	B. D. For N. E. Hangers————————————————————————————————————	Benci Ben Ben Ben
	Per 100 feet	Lag of Coaci Bed Hand
	Hazer Maser Co	Hand Hand Jack Jack
	Figure Handle and MTg. Co	Jack Ber Leste Roge
	Lamont Combination	Graf Clip Ger Se
	Black and Tinned Burrs. dis 46 % Bay State, ordinary, in bulk. dis 55 % Nore.—Rivets are frequently sold at concessions of 75 % 016 from above prices.	Gras Silv Ger Cas W
	Copper sivets and stures	Bus Clo Imj
	Stair, Brassdis 2585 \$	Jobbe Ne:
	## Clack waint. ## Clack waint	Prun Barn Tinn
	Manila	Seym Hein Hein First Secon
	Manila Tarred Rope	Acmo Diam Clipp Vieto
	Sisal, Tarred Rope	Howe Shide M. R.
-	Boxwood	Pat
	Stephens Form Stephens	Slidi R. 6 Bar
	Mrs. Pott's frons, Double Pointeddis 40 @ 40&5 \$ Mrs. Pott's frons, Square Backdis 40 @ 40&5 \$ Enterprise Star Irons, new ifst, July 20, 1882dis 40 \$ Combined Fluter and Sad Iron \$\psi\$ dos. \$15.00, dis 15 \$	Res Sh L. & Alber
	Enterprise Star Irols, are its as 4 on a 15.00, dis 15 for Combined Fluter and Sad Iron. W dos. 515.00, dis 15 for Eversible, Self-Fluter , dos., 524.00 net Chinese Laundry (N. E. Butt Co.). 834.9, dis 15 for New England , dis 15 for Self-Baper and Emery Paper List April 19, 1886. dis 25 @ 27 %	Horse Bus Wa Mule
	Common # 5,11¢ @ 11½¢ Patent # 5,13¢ @ 14¢ White Cotton Braided, fair quality # 5,28¢ @ 29¢	Non above
	Patent	Grim Grim Grim
	Silver Lake, A Quality, White	
	Sylvan Spring. A Quality, 50@556.dis10&10@10&10&10&10& Samson, Braided. White Cotton,50¢ dis 20@20&5 & Samson, Braided. Drab Cotton	'
	Cable Laid Italian 2004 India Cable Laid 211 Silver Lake, A Quality, White	
	Clark s No.	DYN
	Walker s. dis 10 s Attwell Mfg. Co. dis 25 & 334 s Hammond's Window Springs. dis 40 s Common Sense, Japanned. Coppere, and Bronzed. gross Six Oppered to Common Sense, Nickel Pinted. From \$13,00 net	
1	Universal dis 30 s Kempshall's Gravity dis 60 s Eempshall's Model dis 00@602-10 s Corbin's Dalsy, list February 15, 1886 dis 70 s	Be
	rayson's refrect	
-	Ives Patent. dis 55 \$ Liesche's Nos. 100 & 110, \$\psi\$ gro, \$8; 105, \$10. dis 20&10 \$ Sask Weights. Solid Eyes, in ton lots. \$\psi\$ ton, \$90	HE
Management of the Parket	Broused	IN :
-	Disston's Circular, Mill and Cross Cutdis 45&10 \$ Disston's Hand, Panel, Rip. &cdis 90&10 \$	P
	Atkins' Circulardis 50 %	

7	H	E	1	R	O	N	A	G	E
A	tkins'	Cham	pion	and	Eiec	tric T	ooth X	Cuts.	Gr Old
A	tkins'	Hollow Shingle	Back Mul	ay, D	rag, 8	te	ooth X Footh dis 30 (d	21 @ 22 dis 45	e St.
4	V. M. & V. M. & Peace C	C. Cha	mpio	hlu E	uts. R	egular		foot 26	c Ch Le Pa
Not not by	Peace C Peace C	and Pa ross Cu ross Cu	nel a ts, St	nd R	ip	dis 208	£10 @ 20	&10&5 foot 25	Re Re
but het hen	eace B lichard lichard	and Sav son's C	ws, al	l wid	ths	*******	dis	20&10 .dis 45	Ro
of last last is	Richard	son's X	-Cute	No.	1, 30¢	: No. 2 cher, s	27¢ : N	0. 3, 250 25&10	Dr.
H	Boynton Boynton Hack Se	i's Ligh	tning	one Buc	Man k Saw	X Cuts		2¢ @ 33 8¢ @ 40 dis 10	e Iro
-	Griffin Griffin	's Hack	k Saw	a, con	mplete	ly	dis 40&	10 @ 50 10 @ 50	% Bu
	Diamo	nd. Ha Fram	ws at ck Sa les.	ws a	ades., ad Bla	des		.dis 25	% Ba
70 mm	Red, Polaw Ro	lished a	and V	arni	shed	F doz \$	# gro (1.50, dis 1.50, dis 1 list dis \$7.75, di 4is40&5 \$2.00, dis	12 @ \$1 10@15 10&10	1 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
000	tillman	Sets. n's Gen n's Imit	uine	dos &	los \$5.	00 and	\$7.75, di	s 40&5	% Se
A SHIP	commo leach's lash's.	n Level	No.	0. 88.0	00: No	# doz	\$2,00, d \$2,00, d .00, dis .10 @ 208	8 40&5 5 @ 20	Co
and her in	iamme Iamme Bemis &	r, Hote r, Bemi Call Co	hkiss is & C .'s Le	all C	o.'s ne	w Pate	\$5,50 entd	dis 10 ls 30&5	% Ire % W % Ba % Ste
1	semis a Semis a Liken's	Call C Call C Genuir	0.'s P 0.'s C	late. ross (ut		8.00. di	dis 10	% Bo
1	lart's l laston	atent l's. Star	Lever	io. 15	Ham	mer. \$5	\$7.00, d	18 55&5 d18 20 1 20&10	% Ive
1	Atkins' Atkins' Atkins'	Adjust Criteri Criteri	on	r Hai	id Sa	ws	per	doz \$6.0 doz \$7.5	% 70 50 Ti
1	dorrill' Croissai Boyntoi	s.No. 1. at (Kell a's No.	\$15.0 er). No L. \$12	0; No 0.1,81	8. 3 ar 5.00; N	10 4, \$2 10, 2,\$24 2, \$10	di 1.00,dis	349&10 dis 25	% Si
1	Saw tkins' Scale	Patent	le 			p	\$2.00. d00. dis .10 @ 200 .\$5.50 ent d mmer.d (3.00, dis (3.00, di	ets \$6.0	10
1	latch, d latch, d Inion F	Counter Fea. No Platforn	. No.	171		*******	er doz s 	doz \$7.5	1 1
100	Juson F Chatille Chatille	Platform n's Gre n's Eur	n, Str ocers	Trip	Scale	8	\$2.	10 @ 2.5	0 1 % 1
1	Chatille Camily.	Turnb	orite			**** ***	.dis 306	dis 40	% Ge
20.20	cale Be	eams, L	lst of	Jan.	12, 19	115dis	60&5 @	60&10	% Br
1	djusta Box, 1 F Box, 2 F	ble Bor Iandle.	Sera	per (8. R. &	L. Co.).	\$6.50, di loz \$4.00	s 20&10 , dis 10	W SE
1	Peffanc Poot	e Box a	nd Si	ip	******	*******	dis 50	\$ 20&10 \$ 10@60	NI NI
1	Ship, Pr	oviden	ce To	ol Co	d Do	or Fr	\$6.50, di 10x \$4.00 10x \$6.00 10x \$6.00	.dis 10	S Fe
1	Screen	Corner W Dri	Irons	. Wa	rner's	Fram		118 3314 118 3314	% Bi
H	Muston	a Datas			******		d1	845&10	8 "
20 20 2	stanley	R. & L. R. & L	Co.'	Var Blac	nished k Har	Hand adles	les	dis 30 s 60&10 s 50&10	% Ba
	Sargent	& Co.	Nos.	40 & 60, R	30, Ca	rged Bl ust Stee Blade	adedi	8 70&10 8 60&10 8 60&10	W W W
	Knapp	& Cowl	es' No	0. 1 E	xtra.	di	dis 60&: .dis 60 @ s 50&5 @	20 @ 70 60&10 50&10	A AI
1	Champi Clark's	Patent	duete.	bla		d	is 20&10	dis 25 dis 25 @ 331/8	TI La
	Knapp Ellrich'	& Cowl	es' Sc	rew-	Driver	Bitts.		dis 30 doz 90 dis 25	E Jo
1	Kolb's Gyracus	Commo se Scre	n Ser w-Dri	ver E	its	¥ d	0z \$6, di dis 30	.dis 25 s 25&10 & 30&5	G G G G G G G G G G G G G G G G G G G
1	Wood S	lead Ir	List.	Febr	uary d	15, 1886 8 75&1	dis 30		Ri
	Flat E	lead B	Bras	8	d	dis 7	0% Ex	tra 10	@ Bo
	Roun	d Head	Bron	ze		dis 7	5 x 81v	ец.	Je Ja
1	Roun Bench	d Head	. Iron			*******		dis 50	Fi
	Bench	, Wood	, Bee	ch	******	dis 558	&10 @ 55 &10 @ 55 &10 @ 2 & 75 @ 7: dis 75 dis 70	&10&10 dos \$2,5 s 20&10	25 A
	Lag or Coach,	Coach Patent	Gimi	et Po	int	.dis 25	& 10 04 2 8 75 08 71 dis 75	5&10&5 5&10&5 @ 75&5	S SV
	Hand R	ail, Sar	gent'	n, Be	ckley	& Co. 1	dis	18 25&5 3616&10 &10@75	K Sv
1	Jack Sc Jack Sc	rews, h	filler.	s Fall	s		********	dis 70 dis 50 dis 35	S Gi
1	Scro Lester,	il Sav	va.	0.00.	******	dis 60	&10 @ 6	0&10&5	% Co
1	Seyt Grain	hes.—	Assoc	latio	n pric	es.)		die 25	% Fi
ı	Germ	an. Cas	f or S	lilver	Stool	u ac sna	arp#	doz \$8,1	00 T
	Silver	Clippe an Stee	r. Bo	xed a	and Sh Wald	arp	9	doz \$7.0	00 Ti
l	Wal Bush,	Bramb	harp le an	and d We	Boxed ed	. Full S	set or	doz \$6.	70 Le
l	Impe	rfect G	rass a	nd B	ush	******		doz \$5.0 doz \$5.0 doz \$6.1	00 Sh 00 Li
ŀ	obbers	who g	ive a	n ext	ra 5 o	r 10 %.	set or	naded b	S De
	Americ	an (Cas	t) Ire	ns	ee Pri	dis 75	dia	5&10&5	St Co
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1	Ames' 8 Note, above,	hovels.	Spacers f	les, & requ	e., list	Nov. 1	. 1885 mail e:	dis 20	K Re
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Steel Wire, Standard list	題: これの大田田田
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o and Polishin	-

20 %	Traps.
20 % 30 %	Newhouse dls 35 ± Oneida Pattern dls 60&10&10 @ 70 ± Game, Blake's Patent dls 10&0 @ 70 ±
756 C	Game, Blake's Patentdis 40&10&5 % Mouse and Rat—
10 % 82.	Mouse, Wood, Choker & doz holes, 15¢ Mouse, Round Wire & doz \$1.50, dis 10 £
10 %	Mouse, Catch-'em-alive doz \$2.50, dis 15 %
&5 %	Mouse, Delusion ♥ gross \$18.00, dis 15 € Rat. "Decoy" ♥ gross \$10.00, dis 10 €
1.60 .37¢	Game, Blake's Patent
	Trowels Lothrop's Brick and Plastering
75%	Lothrop's Brick and Plasteringdis 20&10@30 5 Reed's Brick and Plastering
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2.25 ted.	Brade's Brick dis 25 g
36 5¢	Garden
.05	Butter and Cheese dis 25 % Trucks, Warehouse, &c.
50 \$	Garden
82 %	Tubes. Boiler. See Pipe. Twine. No. 9. Flax Twine, 14 and 14 b Balls. 24 g 31 g No. 9. Flax Twine, 14 and 15 b 20 g 22 g No. 12 g 14 and 15 g 20 g 22 g No. 12 g 16 no. 12 g 17 and 15 g 20 g 22 g No. 24 g 17 and 15 g 20 g 22 g No. 25 g 17 and 15 g 20 g 22 g No. 26 g 17 and 15 g 17 and 16 g 17 and 17 a
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210 % 210 %	No. 36, " 4 4 and 16 " 19¢ 21¢ No. 264, Mattrass, 14 and 16 "
50 %	Mason Line, Linen, 5
20 %	3-Ply Hemp, 1 to Balls
	Cotton Wrapping, 5 Balls to D
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y'8 &2 % £10 %	Vises.
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245 % 210 %	Backus and Union
	Prentiss
210 % 0&5 %	Saw Filers— Bonney's. Nos. 2 & 3
k10 % k10 %	Stearn's
k10 %	Valid Box
3160 3160 360 %	Cowell Hand V'ses
\$10 %	Wagon Boxes.
925 %	Washer Cutters. Smith's Patent # doz \$12.00, dia 50&10&10 \$
2560	Johnson's
25€	Bonney's
. 50€	Wedges.—Iron. # b 34¢ Steel # b 34¢
\$1.50 \$1.75	Bauer's Pipe Viscs
\$2.00 , 17¢ @32¢	Whiting's Flat Iron Band
0,17¢ @32¢	Well Wheels-8 in., \$1.75; 10 in., \$2.05; 12 in., \$2.75
	WIFE.
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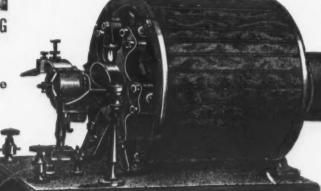
NICKel-Plating and Polisning Established 1863.

SOLE MANUFACTURERS OF

THE AMERICAN NAMO ELECTRO-PLATING MACHINE.

est Plating Machine in the Market.

EADQUARTERS FOR EVERYTHING THE PLATING AND POLISHING LINE.



Largest Manufacturers IN THE WORLD OF Nickel Anodes, Nickel Salts, Patent Muslin Buffs,

Polishing Lathes,
Polishing Felt,
Polishing Rouges,
Poling Compositions, Walrus Leather, Wood Emery Wheels, Platers' Brushes, &c., &c., &c.

Zucker & Levett Chemical Co., 538 to 564 W. 16th St., 36 to 40 11th Ave., NEW YORK, U. S. A

WHOLESALE METAL PRICES, July 28, 1886.

METALS.

FRON Dury: Bars, 8-10¢ to 1 1-10¢ % D; pro
yided that no Bar Iron shall pay a less rate of dut
than 85 %. Sheet, 11-0¢ to 15-10¢ % 1b. Band, Hoo
and Scroll, 1¢ to 1 4-10¢ % D. Railroad Bars weigh
ing more than 25 D W yard, 7-10¢ of 1¢ W D.
Non-dead American Dig Iron

Foundry Foundry Gray For	No. 2	X.						. 96	ton	17,00	60	17,50
0.00	No.	1	80	00	te	fa	F	ig	H.r	on.		
Carnbros								. 10	ton	\$18.50	0	19.00
Coltness.								. 195	ton	19,75	0	80.00
Shotts								. W	ton	19,75	6	20,00
Glengarn	ock.							The	ton	18,50	0	19,00
Gartshar	rie							100	ton	19.00	(0)	19 25
Langloan								. 168	ton	19.50	0	20.00
Summer	00							391	ton	19,25	0	19,75
Dalmellin	ceton							367	ton	18.50		
Eglinton	ik oon.							384	ton	17.50		
Clyde	******							361	ton	18.00		
Ciyae	,							. Br	2072	*****	-	
				ĸ						ma	_	ar 00
steel, at l	Easter	D I	mil	ls.				. 91	ton	\$34.50	0	85.00
rald Rails	Ta							. 10	ton	218,50	(0)	19,00

Rails.
Steel, at Eastern milis
Scrap. Wrought, % ton, from yard \$18.25 @ 18 50
Bar Iron from Store.
Common Iron: % to 1 in. round and square * b 1.75 @ 1.80

% to 1 in. round and square (m to 1.75 @ 1.80s
1 to 6 in. x36 to 1 in 1 1 1.75 @ 1.80
Daffined Iron:
1 to 6 in.x 3/4 to 1 in
1 to 6 in v 86 to 1 in (1 10 1.0 (p 2.0)
1 to 6 in.x 14 and 5-16 W D 2.10 @ 2.90¢
1 to 0 in. x33 and 3-10.
Pode As and 11-16 round and sq W 10 2 (2 2.04)
Bands—1 to 6x3-16 to No. 12 10 2 @ 2.5¢
Delius 1 to 3 to 5
"Burden's Best" Iron, base price 10 10 2.96
Burden's "H. B. & S." Iron, base price, B D 2.5¢
Norway Nail Rods 5 @ 6¢
Sheet Iron from Store.
SHOOL HIGH HIGHE STORE

District Inc.	Common	R. G.
	American.	Cleaned.
Nos. 10 to 16 10 10	2.70 @ 8 #	3140
17 to 20	8 (0)	31/4
21 to 24 W TD	8 66	3160
25 and 26	8.12% 6	894€
97 10	8,20 (0	834¢
26 W To	8.371/2 @ 3.50	¢4 €
	В В.	2d qual.
Galvanized . to 90	W D 5 #	4369
Galvanized : 1 to 24	W ID 5560	5 9
Galvanized, 25 to 26	WID 5946	598€
Galvanized, 27	10 20 0540	594#
Jalvanized, 28	W ID 6940	61/40
American Russia	W ID A, 10¢	B, 90
Russia	IN ID 91/46 (1016 0

erican Cold Rolled B. B. .. W D 5 0 7 0 Iron Wire. -(See Wire.) NTEEL.—Durt: Ingota, Bars, Sheeta, &c., valued at 4¢ \(\pi \) or less, 45 \(\pi \) ad. val.; valued above 4¢ and not above 7¢ \(\pi \) \(\pi \). 2¢ \(\pi \) \(\pi \); valued above 7¢ and not above 10¢ \(\pi \) \(\pi \). 24¢ \(\pi \) \(\pi \); valued above 10¢ \(\pi \) \(\pi \). 24¢ \(\pi \) \(\pi \); valued above 10¢ \(\pi \) \(\pi \). 24¢ \(\pi \) \(\pi \). Extras.—Steel Bars, Rods, &c., cold hammered or polished, in any way in addition to ordinary hot rolling, 13¢ \(\pi \) \(\pi \) in addition to the above; Steel Circular Saw Plates, 1¢ \(\pi \) \(\pi \) in addition to the above.

American Cast Steel.

American Cast Steel. American Steel, see Pittsburgh quotations. Chrome Steel. Too! Steel, ordinary sizes, % to 3 inches,

Tooi Steel, ordinet												10 8	888	14¢
Magnet Steel									- 1				-	
	Engl	im	h	8	£ e	el	١.							
Best Cast											4	9 M	18	
Extra Cast							٠,		ID.	1	034	1 (3)	1.17	· ·
Circular Saw Ph	ates										1	R III	. 14	- 4
Round Machiner Swaged, Cast Best Double She Blister, 1st quali German Steel, E											. 4	i in	16	¢
Best Double She	ar										. 16	100	15	0
Whater let quali	tw										. 6	B	14	
Clampan Steel B	age.										- 6	Th	10	
2d quality	1004				*			•			18	m	9	
3d quality											14	1 Th	- 8	à
ad quanty	S-4	1.3					•					190	18	- 2
Sheet Cast Steel,	18¢ dr	LELL	ity	* *							- 3	90	1.4	7
2d quality					0 0	0 0			0		-3	100	19	124
3d quality								0.1		0, 0	. 9	III)	135	79F
TIN DUTY	Plates.	S	he	eta	5.	Te	\g	g	ar.		and	17	'er	ne,

TINL	. E	tos	101	T	No	m	r i	9.91	ъđ	ъ	M.	PH	fr	ne.					
Marian													- 10	4 TD	223	. 0	0	24	1
Straits.													- 9	1 10	120	249	- WO	460	. 1
februar Harlin													- 10	1 20	440	9	N/A	ACT.	- 1
Bar					4.9			*		2.5		• •	. 1	I ALI	200	Ÿ	40	140	1
		h	a	re	30	-	A	7	FI	E	ı	1	21	n & 4	084				
I C 10x14	995	8	he	et	s.					-3	g	b	O.W	8	5,00)	0		
I C 12x12	952	13	he	est	165					. '		-	6	1	5,200)	600	7.	.5

I C 10x14 225 sheets	5.25 4 10.25 6.25 6.25 6.25 6.25 6.25	(h 7.50 (p 7.50 (d 15.25 (h 9.25 (d 9.25 (d 9.25 (d 7.00
For each additional X add	1.25	\$ 5.00
Coke Tin Pl		
Be	st. Or	dinary.
I C 10x14	.75 \$4.55	@ 4.60

IC	4.75 (3	7.9
IC	rs, 225 sheets. 5.00 eets 9.80 @	
	Terne Plates. ime Char. 2d. quality Con	ie.
10	1.75	6,75
10	50 @ 4 75 4.3736	
10	0 @ 4 75 4.3739	4

I X 14x20. 6,00 @ 6,50 I C 20x28 9,00 @ 9,75 I X 20x2812,00 @ 14,00 I C 20x20018,50 @	8.75	8,50 @	4.95 5.70
Tin Boiler			
IXX 14x26, 2 sheets for No. 1XX 14x28, 2 " " No. 1XX 14x31, 2 " " No.	8.	ets @	18.0
COPPER.—DUTY: Pig, Copper, & W D. Manu articles of which Copper	factured	(includir	ng al

value). 35 % ad valorem. Ingot, Lake Ingot, Baltimore Ingot Anchor	de de	10144	00	
Cold Rolled Sheet,	AH	Siz	es.	
16 oz. per square foot, and heav.				
12 and 18 oz. per square foot			.911	b, 180¢

TINNING.
Sheets, one side, 10, 12 and 14 x 48each, 66
Sheets, one side, other sizes P square foot 2166
For tinning both sides, double the above prices.
For tinning boiler sizes, 9 in., 14 x 61each, 15¢
For tunning boiler sizes, 8 in., 14 x 56each, 126
For tinning boiler sizes, 7 in., 14 x 52each, 12¢
Shouthing Conner. (14 v 48)

	Sheat	thing	C	opper	. (1	4 x 48	8.)
14 02	and u	p to it	OZ.,	vier, pe per lb.		.18	Cold. Rolled \$0.18 .19 .20

14 oz. and up	t. and heavier to 16 oz., per to 14 oz., per cents each.	per lb.	\$0.17	Rolled. \$0,18 .19 .20
	Copper H	ottom	i.	

		Ch By By		HE C	6601					
Pits and	Flats.	14 oz					,	. 98	10	204
Pits and	Flats,	12 OE						. 1	D	219
O'Nelli	's Pu	tent	Pi	ani	she	d C	opp	er	B	iet.
14 and 16							case			

10.00	Boiler Sizes.	×
14 and	7 in., 14x52. 8 in., 14x56. 9 in., 14x60. d 16 os. and heavier. 25% By the case. 2 th 28 (And all sizes not over 20 in. wide.) 24x48 and 30x60.	id
4 and	1 16 oz. and heavier 18 18 31	

E					s Planished	Coppe
	•	She	athi	re.—(8	ee Wire.)	

remov	N. KRINGER	ming w	crent, in m	5.5		G
BE	LASS	AND	GERM	IAN I	SILVE	H.
FOREM	d Sho	irpe's G	auge the	Stand	ard for Mi	Metal;
STREE	Manu	facture	rs' Price	List,	Januar	¥ 17,

LEADDu	TY: P	12. 82	W 100 m	: Old L	end.	26 :
tb ; Pipe an	d Sheet	. 3d W	B.	,		
Pig				4.9	501	5,25
Bar. Pipe Block Tin Pip				5	1600	534
Pine.				6340	t. dis	20
Block Tin Pin	(A)			404	dis.	20
Tin Lined Pap	ρ			150	e. dis	20
Sheet				78/4	e. dis	20
Sheet	95 %		Drop. St	60 · Br	ick S	61.8
Chilled Shot.	59 bac	185 Bb	Diop, o.	.00 , 200	ion,	1 8
A BUTTERN OR AT NO.	180					
Hallett's Cookson				IR Th NL	(Oh	0
Cookson				44 012	@ 1	1
COOKSOII	Durke	Pio	Rare e	nd Plat	COG W	i s
100 lbs.	Duty	. 1 16,	Dy AMERIC O	SELLE I VEST	ioni a	11.00
American, car	n lin			4	84 40	a R
Porgonnant	823				78 F W	0
Bergenport	. The	m 121.	ook #1	80 99	100	Dhan
		Of Die	DOE, \$1	ay de	100	108
Sheet, 216¢	die m.			E 700	OK	OK.
OUU ID CHEEKS					KO 0	.00
Zinc.—Open				dia 1	4 60	0949
Zine Tubing						
Plain	inc n	ubin	g-Dis.	20 %.		4 300
Plain	******	*****		*******		.20
Fancy	*******		*****			.00
Scotch and Ex						
BABBITT N. P. U	TAM MC.	FAL.		m m	01/0	
N. P. U				As ID	039 (d	3 69
X						.100
X X				******		.150
J. B		*****				,50¢
WIRE.						
Market	Wire	Put	up in 6	bune bune	dies.	
Market Nos. 00 to 9,	10, 11,	12,	13, 14,	15, 16,	17,	18,
10 Bright Market		-	-	-	-	-
10	11	1136	1216	14	15	16
Bright Market	Wire.			d	is 67	68
" Charco	al			d	18 47	16 %
ii Rale W	lina No	0.750	19	d	in 621	64

Nos. 00 to 9,						18.
10	11	1116	1216	14	15	16
Bright Mark	et Wire.			0	lis 67	16 8
" Char	coal			d	lis 47	16 %
" Bale	Wire. No	98. 76 O	12	d	lis 62	168
Annealed Ma	rket Wir	·e				
" Fence	Wire, N	os. 8 a	nd 9. > di	is	67	68
" Grape	Wire. N	os. 10 t	to 14 1			
Coppered Ma	rket Wir	· ·		di	s. 621	6 %
Ba Ba	le Wire,	Nos. 7	to 12	di	8. 57	6 %
Galvanized M	ence Wi	re	Car	Beers		72.
Sto	ne or	Wes	wine !	Wire.		

	ito	ne	or	W	ORV	ing	. 8	Vire	B.		
Nos	16	17	18	19	:20	21		28	24		
Cents	14	15	16	19	20	21	22	28			26
Nos	27	28	29	80	81	85	88	34	85	86	
Cents	28	29	30	32	33	35	87	40	45	55	
Nos. 16 to	18.							dia	. 70	6	70 9
19 to	26.							. 66			70 %
27 to	36.							. 64	75		75 %
Galvanize	d St	one	Wir	Ø				. 44			50 %
			814	lac	WI	Fe.					
Cast Steel	St	eel 1	Vire	list					d	is.	50 s
								ire		100	

	Old English Gauge t	Common High Brass	Low	Gildir Bron: and Coppe
	All Nos. to No. 16, inclusive	. \$0.22	\$0.26	\$0.3
Н	No. 17 and 18		.187	
Н	" 19 and 31		,28	*
	" 21		.29	*5
	64 22	26	.80	**
1	** SS	185	.382	.4
	11 24	30	.34	

66	22		. 26	.80
- 0.6	98		. 185	.82
14	24		.30	.34 .3
66	(3.0)		.82	.86
	-9-0		. 35	.89
		**********	. 38	.42 .4
66	28	**********	42	.46
61			. 45	.49 .4
64			.48	.58 .6
66	dist		.51	.55 .6
64	89		.55	.59 .7
6.6	88		.59	.63 .8
6.6			.64	.08 .9
44	85		.70	.74 1.8
66	86		.76	.80 1.5
66	00		1.00	1.04 1.7

" 40 2.60	2.60	
Spring Wire, 2 cents per pound	advance	Whit-
ened Wire, 3 cents per pound adva	nce. Flat,	Square
and Half-Round Wire, 4 cents ac	ivance on	Hound
Wire. Fancy Wire, not less than 10 Round Wire. Spooling on one-	cents adv	note on
cents per pound extra. Spooli	ng on ten	-pound
Spools or more. 2 cents per pound	extra.	

Spools or more																						
MISCELLA	N	E	10	N	U	8	ı	7	Г	1	ľ	V.	N	п	E	ı	š	á	3,9	8	ro	OK
				1	8	0	ı	d	4	91	r.											
16 & 16. Warran	nte	Bd	١					Ţ											!	15	0	15%
Extra											,	. ,							.1	14	0	1434
No. 1 Refined																			.1	8		1819
No. 2 Solder								۰											1	18	0	1216
Extra wiping																			. 1	134	0	1254
					н	B.	ŀ	v	ė		8											

		vets.		
Iron and Tinne	d, new list	Dec. 10,	1881	dis. 50 %
In bulk, new tie	st. Dec. 10	. 1881		dis. 45 %
Copper Rivets	and Burrs		.dis. 50&	10@60 \$
Nos. 7	9 10	11 12	18 14	1
10 10 49¢ 50	de 50e 54e	56¢ 58¢	604 65	¢ 70¢
	Stove	Bolts.		
American Screen	w Co.'s			dis. 70 %
R. B. & W	**			dis. 70 %

					4	44	2	-	la	P	m	.4	b								
	Augu		100,															f	84	ef	
8	m. mrg.	C	0	* 1				. ,		*		•			*	P.					0 1

0	184.	ag.	80.	4611.	
Sizes.	EFH	IEH	нн	HE	
25 6 x 8 to 10 x 15., 40 11 x 14 to 16 x 24. 50 18 x 25 to 30 x 30. 54 15 x 36 to 34 x 36. 60 26 x 28 to 34 x 36. 70 28 x 38 to 26 x 44. 80 96 x 46 to 30 x 50. 84 30 x 25 to 30 x 54. 90 30 x 56 to 34 x 56.	13.00 17.00 19.00 20.00 21.50 23.50 25.00 26.00	16.00 17.00	11.50 14.50 15.00 16.25 16.50	\$9.5 10.7 18.2	
100 36 x 60 to 40 x 60	81.00	28,00	26,00		
Double	1st.	2d.	9d.	461	

	1st.	2d.	9d.	460
Sizes.	EFH	IEH	нн	H B
25 6 x 8 to 10 x 15	\$14.00	\$13.50	\$13.00	\$12.25
40 11 x 14 to 16x 24	17.00	16.00	15.25	14.50
50 18 x 22 to 20 x 30		20.50	19.00	
54 15 x 86 to 24 x 80	24.00	22,00	20.00	
60 26 x 28 to 24 x 26	26.00	94.00	21.75	
70 26 x 36 to 26 x 44	27.50	26,00	22.50	
80 26 x 46 to 80 x 50		28.00	24.50	
84 80 x 52 to 80 x 54	81.50	29.00	26.00	
90 90 x 56 to 34 x 56		30.50	28.00	
94 34 x 58 to 34 x 60	85.00	84.00	81.00	
00 96 x 60 to 40 x 60	88.00	86.00	84.00	

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	No. 2	534 G	5					
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	City Whites, No. 1	378 4	- 4					
l	City Whites. No. 2	136 68	- 25					
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I	New Seconds, light	394 68	- 4					
١	" dark	294 68	- 8					
	Cotton Canyas	926 68	- 9					
	Linen Canvas No. 1	4 0	- 6					
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	Gunny Bagging, No. 1	136 @	3					
	No. 2	1%	4					
	Kentucky Bagging	2 68	2					
	Buriap Bagging, No. 1	156 (8)	2.5					
	Tar Shakings	194 (8)	20					
	Hemp Twine Stock	334 68	- 01					
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ŀ	Soft White Shavings, No. 1	276 to	25					
ł	White Shavings, No. 2, Soft	254 68	23					
	Mixed Shavings, part White	124 18	- 3.					
	Ledger and Writing	776 4	2					
	Solid Stock	724 W	3					
	Book Stock. No 1, light	1	1.3					
	Pure Manilas	175	8.5					
	Bogus Manilas and Hardwares, cwt 6	A29 W	00					
	Commons, # 100 B &		O'C					
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	Straw Board Cuttings, # cwt	15 78 9	75					
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Black Ivory Drop, fair.

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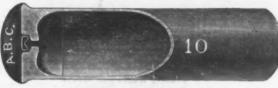


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MECHANICAL.

Polishing the Interior of Metal Tubes.

Within the last 20 years the pneumatic system of transmitting packages has been brought to a practical success, but the tubes, which form one of the principal parts of the apparatus, are very expensive on account of the absence of expeditious means to produce the necessarily smooth and uniform interior required for this purpose. A machine has been invented and recently patented which presents a number of valuable features, and presents probably a complete solution of the problem of rapidly polishing the interior of long sections of iron or other metal tubing, so long sections of iron or other metal tubing, so that the cost is not increased beyond an improper limit, and especially adapts them for the pneumatic system of transmission, to the exclusion of the expensive brass tubes that have been usually employed for that purpose. The machine, as we find it described, consists essentially of a strong iron bed of a trough shape, and of a length to suit the size and length of the pipes to be smoothed. At one end of the bed is attached mechanism for giving a rotary motion to a long bar which for giving a rotary motion to a long bar which has secured to the outer end one or more cylhas secured to the outer end one or more cylinders of emery. The pipe is held by means of a sleeve which is carried along the bed-plate on a slide, by means of suitable feed mechanism, at the exact speed desired. The sleeve has a pulley attached to it which is slowly revolved by means of a belt in an opposite direction to that of the bar to which the emery cylinders are attached. In connection with the smoothing mechanism is a hose which is so arranged that its nozzle is carried along with the pipe to furnish water carried along with the pipe to furnish water for clearing the bore of cuttings, &c., as the

smoothing process proceeds.

In operation the bar, with the emery cylinders, is given a rapid speed, then introduced in the end of the pipe, when, being driven in an opposite direction at a slow speed and the interior being lubricated with water, the smoothing proceeds through the pipe at a fair rate predetermined by the water, the smoothing proceeds through the pipe at a fair rate, predetermined by the feed apparatus. When the pipe has reached the limit of its movement the operator, by means of a lever, shifts the belts so that the movement of the feed is reversed and the sleeve and pipe are moved back to the place from which they started, when the pipe is removed and another placed in position to undergo the same operation. This machine is so perfectly adapted to the purpose that long pieces of pipe are perfectly smoothed to a uniform diameter at a very rapid rate. The machine will accomplish its work with an operator of ordinary skill, and will greatly cheapen all kinds of tubing in which a smooth interior is required. smooth interior is required.

Marine-Engine Valve Gear.

One peculiarity of the use of very high pressures in marine engines is that slide-valves cannot be used. The power required to work them is enormous, and the surfaces rapidly wear out and become leaky. Consequently piston-valves are employed of necessity, and these are of very large dimensions and great weight. If the number of revolutions were small this would not matter much, but at high speeds just the same difficulties are encountered in dealing with these piston-valves as those which crop up with the pistons and other reciprocating parts. Momentum and inertia come into play. In the case of the main pistons these parts. Momentum and inertia come into play. In the case of the main pistons these can be combatted by compression and lead. For obvious reasons, however, the inertia and momentum of piston-valves do not admit of being fought by compression. This was shown by the English engineers, Messrs. Marshall and Weighton. In a paper prepared by them a short time ago they give diagrams of crank-shaft strains and moments, obtained by experiment and calculaments, obtained by experiment and calcula-tion with piston-valves weighing respectively 500 pounds and 1500 pounds, from which they deduce the formulæ $S = \frac{R^0 \sqrt[4]{W}}{W}$ and

 $S_1 = \frac{R\sqrt{W}}{N}$, where S = maximum resistanceof one valve in pounds at beginning of stroke, S_1 = mean resistance of valve in pounds during the whole stroke, R = revolutions per minute, and W = weight of valve and rod in pounds. Thus it will be seen that the stresses augment as the square of the number of revolutions, and as the square roots of the weights. Consequently, at comparatively moderate speeds, it would be almost impossible to make valve gear which would stand the strains to which it

50

Circulation in Steam Boilers.

motive, which the circulation of the water in a steam boiler when it is in operation ex-arcises upon its efficiency, its tendency to foul up, and its liability to various annoying stood or appreciated by man of the greatest importance. of the greatest importance. Were it not for the fact that heat applied to the under side of a body of water is communicated to it, thereby expanding it and causing it to rise through the colder water above and producing a circulation, it would be practically impossible to generate steam in the sible to generate steam in the nanner. The efficiency of any nary manner. given area of heating surface depends al-most wholly upon the perfection of the circulation of the water in contact with it.

This will probably be better appreciated This will probably be better appeared when it is stated that the experim when it is stated that the experiment has been performed of immersing a cubical metallic box in water and heating it from the inside. The horizontal upper surface of the box generated more than twice as much steam per square foot of surface as the perpendicular sides, while the bottom or lower side generated none at all. This was due to the fact that the steam bubbles or vesicles formed in contact with the upper surface had nothing to interfere with their prompt liberation from that surface; the prompt liberation from that surface; the heated water was equally free to rise, its place being immediately filled by a fresh supply of colder water, thus forming a rapid circulation; the operation went on with greater difficulty in contact with the vertical surfaces, while with the lower horizontal surfaces, while with the lower horizontal surfaces, while with the lower horizontal surfaces the steam as formed would have a tendency to hug the surface and prevent first aim should be to get a properly devised be vertical as far as possible. If a boiler live and even heat

ble, in order that the water may have opportunity to circulate rapidly, and the steam when formed be disengaged as freely and quietly as possible

Hot Water Heating.

Mr. L. S. Daniels of the Hopson & Chapin

4 R.

DS

the contact of water with it, thus effectually preventing any circulation. When these facts are appreciated it will readily be seen how essential it is to the proper performance of a boiler that the water spaces should be large and as free from obstruction as possible in order that the top of a stove or exposed to the fire in almost any shape is all that the top of a stove or exposed to the fire in almost any shape is all once as it is heat longer, and consequently will be more easily managed and give better respect to the fire in almost any shape is all once as it is heat longer, and consequently will be more easily managed and give better respect to the fire in almost any shape is all once as it is heat longer, and consequently will be more easily managed and give better respect to the fire in almost any shape is all once as it is heat longer, and consequently will be more easily managed and give better rehave d the freely may be such is not the case. The coil boilers which have been referred to in your paper as in use in Canada are not generally constructed of coiled pipes, as might be supposed, but are formed of horizontal pipes set on a slight incline, and con-nected with headers or branch tees and re-Mfg. Co., of New London, Conn., writes us as follows on the subject of hot-water heating:

Having been interested for the past 18 years first in the manufacture and later in the erection of heating apparatus, the writer has taken great interest in the articles which have appeared in the columns of your paper on this subject, and should the ideas here expressed seem of sufficient merit you are at liberty to publish them. The writer first came in contact with hot-water low-temperature direct heating in of dirt possible and be accessible for clean-wined that the water will unto boil in any part until the contents of the enire circulation reach that temperature. Fig. 1 of the engravings shows 5%-inch pipe to and from the expansion-tank. A steam fitter of large and long this form of heater, one of which is excessive consumption of fuel. Another objection is a tendency to collect dirt, which is difficult to remove. A heater for heating by hot-water circulation should be of a construction that will collect the smallest amount of dirt possible and be accessible for clean-wined that the water will unto boil in any part until the contents of the entire circulation reach that temperature. Fig. 1 of the engravings shows the pipes which contain water. There are objections to this form of heater, one of which is experience advised the writer long ago that less than 34-inch pipe was unfit for any steam connection except to steam gauge, and experience has since shown that this was wise; and, as steam gauges are not water low-temperature direct heating in full time to an ordinary box to the retire circulation reach that temperature. Fig. 1 of the engravings shows the pipes which contains and over the fire In many cases ture. Fig. 1 of the engravings shows the pipes which contains and over the fire In many cases ture. Fig. 1 of the engravings that temperature. Fig. 1 of the engravings and water. Fig. 1 of the engravings of the contents of the ordinary points and the pipes on either the sill that temperature. Fig. 1 of the engrav Mfg. Co., of New London, Conn., writes turn bends very similar to an ordinary box us as follows on the subject of hot-water coil, with a portion of the pipes left out later in the erection of heating apparatus the writer has taken great interest in the articles which have appeared in the columns of your paper on this subject, and should the ideas here expressed seem of sufficient merit you are at liberty to publish them. The writer first came in contact with hotal water low-temperature direct heating in 1877 in the British Provinces, where he was interested in the heating business for sevint merit your standard provinces, where he was interested in the heating business for sevint merit your standard provinces, where he was interested in the heating business for sevint merit your standard provinces, where he was interested in the heating business for sevint merit your standard provinces, where he was interested in the heating business for sevint merit your standard provinces, where he was interested in the heating business for sevint merit your standard provinces, where he was interested in the heating business for sevint merit your standard provinces, where he was interested in the heating business for sevinced that smaller than % inch pipe should nover be used in this business. 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In place of years, interested in the heating business for sevinced of its superiority over steam, neither does he think so now in all cases. Each has its merits under certain conditions, and it is the duty of a heating engineer, judging from past experience, to determine which method is best adapted to heating any particular interested in the heating boiler receives the care that is best adapted to heating any particular interested in the business. In place of the safety-valve on a steam-boiler low-temporature between the safety-valve on a steam-boiler low-temporature hot-water circulation leaves the boiler free from deposits, and it is seldom that a heating boiler receives the care that is ordinarily given to one used for mechanical purposes. An illustration from past experience, to determine which method is best adapted to heating any particular

sults.

There is more difficulty in regulating the fire by an automatic arrangement with small boiler capacity than when a liberal amount of water is used. As to the radiation it should be ample to heat the building in the coldest weather to the desired tempera-ture, and so arranged that the water will not boil in any part until the contents of

A Radial Arm Drilling Machine.

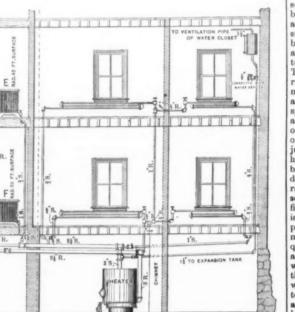


Fig. 1.-Vertical Section of Building.

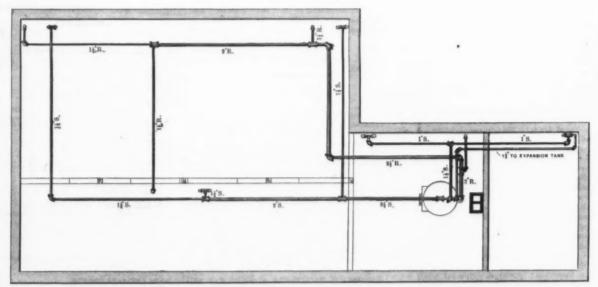


Fig. 2.-Cellar Plan of Building.

HOT WATER HEATING, PLANNED BY L. S. DANIELS, OF THE HOPSON & CHAPIN MFG. CO.

few when any heating apparatus need be run all up, and its liability to various annoying fects, does not seem to be fully undersood or appreciated by many to whom it is the greatest importance. Were it not early in October or earlier, but very cold weather does not come till about January, and after February the need of heat grows less until June. There are about eight months in which artificial heat is required, There are about eight but for about five months the need is for only a moderate temperature. Under the foregoing circumstances the most desirable method of heating is that which allows of the greatest range, other things being equal.

Safety is a matter of great importance, and with hot water there is none of the danger of fire which accompanies all hot-air furnaces, there being no pipes which could in any case become heated sufficiently to ignite wood.

A properly-constructed low-temperature A properly-constructed low-temperature hot-water heating apparatus is so simple that there is no need of the safety appliances that are found indispensable in low-pressure steam heating, the hot-water boiler being always open to the air, and, like a teakettle, will simply boil over. Heating engineers know to their cost the large proportion of users of steam heat in residences who are incapable of using judgment in the who are incapable of using judgment in the care of such apparatus, and often leave its on; the operation went on with management to servants who know little

class of buildings, but for heating hotels, residences and public buildings in constant use steam is not to be compared with hote water circulation as a safe, simple and satisfactory method of heating. First, for reason of mildness of the heat. Second, because The great influence, remarks the Locoof its being susceptible of a great range of
temporature. Between the 38th and 44th partemporature. Between the 38th and 44th parallels of latitude the days are comparatively the boiler were filled with ashes and dirt, on removal of which there was no trouble with the draft of the boiler. It was apparent at once that the boiler had been in care of a servant and the tube-cleaner never used. The ground the writer would take is this: A heating boiler, to give proper results, should be so constructed as to keep itself free from dirt as far as possible and at the same time have every part accessible for cleaning. This can be accomplished by using a boiler with flat vertical heating surface, the writer's experience being that a flat vertical surface will not collect deposits to any great extent by continual use, and boilers so constructed will remain in use for years and give good results.

The heating suface of a boiler for hot-water heating should be large to enable it to be so run that the products of combustion would not leave the boiler at a high temper The grate should also be ample fire carried deep, so that combustion will take place slowly. The heating surface over the fire should be much lower than where combustion is more rapid, as in a boiler for manufacturing purposes In hot-water heating it is to be remembered that the whole system is dependent upon the principle that water expands when heated, and consequently becomes lighter, with a tendency to ascend and move the colder water before it.

lapsed, and on taking down the overflow it cently the night the heat in the boiler diminished a vacuum formed, with the above result. It has been stated that where it is possible to divide the house into sections it is an excel lent plan to fit valves to control the sections, and that occasionally valves are put on the coils, not for the purpose of shutting them off, but for the purpose of regulating the

The writer would hold an apparatus far from what it should be if valves necessary for any such purpose. A cellar plan and a vertical section of a building are here submitted. They show the method practiced by the writer in hot-water direct low-temperature heating, of using pipe cal-culated to give an even circulation, and

dispensing with valves for the purpose of controlling the flow of water.

The radiators A and B are situated in the The radiators A and B are situated in the halls, and C D E and F in the four rooms out of the same. It will be seen that the supply is headed where any two risers are taken off; also that where a horizontal supply is taken off the main it leaves it on the top. A separate pipe is run from the first connection over the boiler direct to the expansion-tank, adding materially to the effectiveness of a low-temperature apparatus. No endeavor has been made to indicate a model heating apparatus by these drawings, but The current so formed moves slowly, and to assist a rap'd circulation the boiler should be constructed to allow the circulation to water boiler with radiation to give an effect-

American vs. English Locomotive Building.

A correspondent of Engineering (London) states that "in ordering English locomotives colonial engineers require specifications, followed by careful inspection and examination, of all engines supplied from England, while the same engineers will buy engines from America without specification engines from America without specification or inspection." The same correspondent also adds: "Why is it that every English railway must have a class of its own, and these often designed by ignoramuses for cranks; consequence is English locomotive builders cannot build engines to stock. American builders, on the other hand, work on stock and especially in slack times; and, being able to order the materials they require without consulting any one, they can keep their men and tools more constantly employed and work cheaper and better." n concluding his letter this writer says:
Of the 12,000 engines on English railways at £400 each, £4,800,000 would have been saved on their original cost had they been made in America. Taking the annual mileage of each engine at 25,000 miles, and the life of an engine 500,000 miles, thus to to keep up the stock the English railways require to build 620 new engines a year. Were they to get them built in America they would save £248,000 a year, a consideration certainly in these dull times."

An interesting machine tool intended for An interesting machine tool intended for some public works in China has recently been built by G. F. Smith, of Halifax. It is a large radial drilling machine. The main standard for carrying the arm is fitted and bolted on a strong base plate, 13 feet long and 5 feet wide, and is fitted with longitudinal T-grooves for bolting the work down. The arm is raised and lowered by power readily applied by lever when the drill is in motion. The drill head is adjustable on the motion. The drill head is adjustable on the arm, and there is a self-acting feed to the spindle. The radius of the arm is 8½ feet, and the clear hight under the spindle to top of base plate is 8 feet. The vertical traverse of the arm is 3½ feet. The drill head is adjustable on the arm 5½ feet, and the spindle had a self-acting feed of 2 feet. An arm bracket cast to the standard carries the driving cone and gearing. This arm has a radius of 100°, and is traversed vertically radius of 190°, and is traversed vertically self-acting by means of a wrought-iron clutch fitted inside the main standard. This clutch is operated by a lever placed in a convenient position outside the standard, so that the position outside the standard, so that the motion of raising or lowering the arm can be quickly reversed. The drill head is traversed along the arm slide by a rack and pinion with a hand-wheel variable feed motion to the spindle. The latter works in a barrel with parallel and conical adjustable bearings to keep the spindle perfectly true. There is a screw feed to the spindle, provided with hardened steel washers to resist the back pressure of the cut, and lock nuts to take up back lash and prevent the spindle falling by its own gravity. The machine weighs 11½ tons, and is the largest radial drilling machine ever made in Halifax.

Horizontal Windmills.

Horizontal Windmills.

Sir William Fairbairn, in his "Treatise on Mills and Millwork," gives the following interesting account of a horizontal windmill at Eupatoria, in the Crimea, as it appeared to him during the period of the Crimean

Around the town of Eupatoria, in the Crimea, there appeared to be nearly 200 windmills, chiefly employed in grinding corn, and all which were in a workable state were of the vertical construction, and only one horizontal mill, which seemed to have been out of use for at least a quarter of a century. The tower of this mill was built of brickwork, about 20 feet diameter at the base and about 17 feet at the top, and 20 feet high. The revolving wings, which consisted of six sets of arms, appeared to be about 20 feet diameter and about 6 feet broad, fitted with vertical shutters, which were movable on pivots passing through the arms, the shutters being about 12 inches wide by 5 or 6 feet high, and the pivots were fixed at about one-third of the breadth from the edge of the shutters, in order that the wind might open and shut them at the proper time during the revolution of the wings. About one-third of the circumference of the wings was surrounded by a segmental screen to shelter the arms and shutters while moving up against the wind, and the screen seemed to have been hauled round with ropes in order to suit the direction of the wind.

Rolling Window Glass .- A proposed method for making window glass by rolling in the Pittsburgh papers and com was found to be choked with red lead, which, as the boiler became heated, the current had description of the process is not very clear, deposited at the highest point; when during it would seem as if the intention of the inventor is to run the molten glass as it com from the pot between two hollow reversible rolls heated by natural gas by pipes full of perforations placed on the inside of the rolls. As the rolled glass passes through the rolls it is received on the opposite side on an iron plate, also heated, from which it is passed into the annealing furnace. If it is claimed that by this process a glass of uniform thickness and polished ready for the sash can be made we are inclined to question the claim. If the temperature of the rolls should be any less than that of the glass when it strikes it it will chill the surface of the glass at once, and it will lose its viscidity and malleability, the properties upon which the process would depend; while, were the rolls heated as high as the glass, they would be of little or no value. It is also well known that glass by touching iron loses a part of its po part of its polish, and this must be restored be "skin melting" the glass, or by polish-ing it as plate glass is polished.

Swedish Guns .- At a recent trial of a 15 cwt. breech-loading gun manufactured at Finspong, in Sweden, the gun is said to have equalled the famous Krupp guns, both in accuracy and effectiveness. The trial took place at the artillery grounds of the Danish Army, near Copenhagen, and as a result of the trial several more guns have been ordered from the same place. It is stated that these Swedish guns are much cheaper than German ones.

Induced Versus Forced Draft for Marine Boilers.

This paper is intended to bring before the so iety the subjects of induced and forced dr ft for increasing the efficiency of marine boilers. Forced air and closed stokeholds have of late been brought into use and have of late been brought into use and largely adopted for naval purposes, and it is but reasonable to suppose that much valuable information has been obtained by the steam department of the navy. By the introduction of iron and steel for shipbuilding, both the speed and tonnage of ships have increased considerably; improvements in marine engines have also received great attention, but the same cannot be said of the builders upon which their success depends. the builers upon which their success depends. They have been allowed to remain much as they were 40 years ago, and so long as space could be found for them they were not considered. It was to meet the requirements of the highest of the funder, which, indeed, may be dispensed with altogether.

To test the practicability of this the author the navy that attempts were made to increase the efficiency of steam generation by artificial means. This being a new departure it has caused great interest to be taken in it. The capabilities of fans for blowing or force out interruption. The results have shown that the duration of steaming with induced air may be continued indefinitely or for the boiler furnaces it was found necessary to close the stokeholds and make air-locks for entrances, so that the outlets should be through the fires, the pressure of air being regulated by the speed of the fans. The furnaces being no longer dependent on natural draft could be forced and the rate of evaporation increased at will. To consume 15 pounds of coal per square foot of grate per hour with natural draft is considered high, yet it is stated that 100 pounds have high, yet it is stated that 100 pounds have been achieved by the forced-air system, a rate that would greatly tax the capabilities of the stokers and the boilers also.

of the stokers and the boilers also.

Forced air having been brought into requisition for marine boilers opens up a wide field for discussion, especially as both mechanical and chemical laws are involved in it. The problem is how to make coals produce their maximum effect. So long as marine boilers had to depend upon natural draft for a supply of air to the furnaces only a fixed duty could be obtained from the coal. To produce higher rates mechanical devices have to be employed. The vital question which arises as to what quantity of air is requisite per pound of coal to burn it usefully has not, as a rule, been taken account of on official trials. The chief points taken in them for measuring results are the weight of coal consumed per square foot of fire-grate and the indicated horse-power per hour. As the results are so different with vaproduce their maximum effect. So long as hour. As the results are so different with rious boilers, itshows that some more definite data are needed. The rate of coal consump-tion will not define the indicated horsepower per foot of fire-grate on the forced-air system. The rate in H. M. S. Polyphemus is: Coal 48.14 pounds per square foot of grate per hour; the indicated horse-power per square foot of grate, 15.63; while in the Howe the consumption is only 33.47 pounds to do the same duty, a difference of 14.37 pounds, clearly showing that some means are needed for regulating the rate of combus-tion. It is quite understood that economy has not been considered in adopting the system for naval purposes; these high rates are only intended for short runs. It is well known that considerable difficulties were experienced on its first application. In the case of the Polyphemus it involved the whole set of 12 boilers. Well made as they were, they could not be made to stand forced air, and they had to be removed and replaced by others of a different class. These boilers were of the locomotive form, and if they had been worked on the locomotive principle would have been excellent steam generators. The locomotive is the highest generators. The locomotive is the highest example known for rapid steaming, due to the blast-pipe in the funnel producing in duced draft and high temperature in the furnace; its full force can be used without injury to either boiler or tubes. The heat is drawn in regularly through the full length of the tubes as fast as it is generated; there is no delay constraint, the first how length of the tubes as fast as it is generated; there is no delay or storing in the fire-box or trouble with priming. Reverse the process by forcing air to the furnace; the result would be to convert the furnace into a battery, and the tube plate into a target exposed to the full force of the heat generated. The resistance in the tubes also having to be expressed would cause the heat to ing to be overcome would cause the heat to impinge severely on their orifices. So with marine boilers. It is the tube plate which suffers most, as there is a constant pressure against it according to the force of air applied. supplied.

There has been so much trouble experi-

enced with boilers upon the forced-air system that numerous devices have been resorted to in order to obviate them. The combustion chambers have been made longer than usual, and the tube plate placed further from the furnace. In some of the French gunboat boilers an inverted brick has been built in the combustion partition chamber in order to break the initial effect of the heat. By forcing air through the fire a constant shower of dust and cinders is blown into the tubes and smoke-box, and large quantities up the funnel. So much trouble has been caused by this that in most cases the pressure of air has been reduced considerably. Whatever might be said in favor of closed stokeholds, there is a feeing of insecurity in being shut up with boilers, with only air-locks for escape if anything happens. There are no records of prolonged steaming at full speed, neither does that appear, receible on this externor. does that appear possible on this system, or that it can be made suitable for merchant

Induced air by mechanical means for increasing the efficiency of combustion is an old idea, and was tried on land boilers before 1854, and more recently on marine boilers. It has been tried on the torpedo-boat Vesuvius, and it is stated that the results were unfavorable, but this may have been due to the defects in the arrangements, as the means employed for forcing are equally available for inducing air if properly adapted to the service required. The solution of the problem of obtaining increased draft without the destructive effects and the dangers of the forced-air system is, in the author's opinion, to place the fan at the extreme exit

of the furnace, and exhaust by its means, instead of placing it in the stokehold at the through the uptake in an iron casing. The uptake is fitted with a dumper, which is copen when steaming with a natural draft. On closing the damper, however, the products of combustion coming through the heiler types in the heiler type in the last is raised, and there is a maximum through the heiler type into the heiler type in the hei the boiler tubes into the uptake are deflected through the fans and follow the course indicated by the arrows. The high speed imparted to them by the fans induces a correspondingly accelerated draft through the whole of the tubes and furnace passages. It will thus be seen that the draft is entirely independent of the hight of the funnel,

To test the practicability of this the author obtained a marine boiler of modern construction and set it up in his factory, so that it might be worked on the same conditions as in a vessel, and extended trials made without interruption. The results have shown that the duration of steaming with induced

		eet.	Inc	ches.
Steel marine boiler-Length		6	-	0
Diameter		5	-	6
Single flue-Diameter		9		9
Tubes No. 44-Length		4	-	6
Diameter			5	394
Area of fire-grate Heating surfaces:	.75	squ	are	feet
Tubes	97	sau	are	feet
Furnace	17			feet
Combustion chamber	38			feet
Total	150	squ	are	feet
Heating surface per square feet				
of fire-grate 2	9.5	squ	are	feet
			Two	hoo

Fans—Diameter
Diameter of inlet
Revolutions per minute, 1,150. In the boiler of a French gunboat designed for working by forced air, an inverted arch has been introduced in the center of the combustion chamber. This addition has been found to be absolutely necessary to moderate the destructive action of the fire when driven by the blast from the fans direct upon the tube plate. The accumulated pressure in the combustion chamber, as it endeavors to force its way into the tubes against the resistance of the gases in them, acts most violently on the orifices of the tubes themselves, soon causing leakage. It must be remembered that the pressure of combustion chamber. This addition has been must be remembered that the pressure of blast from the fans is constant, while the condition of the furnace, as to its power of usefully taking up the forced air, is always changing by the burning of the fuel, and not only is this the case generally over the fire-grate before and after a charge, but at any one time the condition of the fire-grate at various parts differs greatly, some portion or other being always more or less bared of fuel Again, as so much more coal is con-sumed on this system, the disturbance due to the opening of the fire doors is greatly aggravated, and with the increased coal a corresponding increase of clinker is deposited on the fire-bars, rapidly closing the air en-trances, so that the combustion is chiefly on the surface of the bars instead of on the surface of the fuel.

A larger proportion than usual is given y the author to the inlet of the fan for the by the ar isduced draft. This is required on account of the expansion of the gases rendering larger inlets necessary than are required for cold air. Provision is also made for preventing the shaft which passes across the uptake from transmitting the heat it may there acquire to the bearings at either end. Not only is the center portion of the shaft protected by a sleeve, but it is not made continuous through to the bearings, but a pair of hollow couplings are interposed between it and the bearings, by means of which continuity of temperature. but a pair or hollow couplings are interposed between it and the bearings, by means of which continuity of temperature is broken, and the bearings are found to run perfectly cool. The driving gear was also an important question. Special trials were made in October last to test the capabilities of that adopted for driving a pair of 3 foot fans. These experiments were witnessed by several engineers and by an inspector from the Admiralty. The force on the inlet side indicated 15 pounds per square foot over a 4-foot funnel, after which it was run daily to test endurance. Brake-power was also applied to the fan-shaft in addition to the fans, yet no slip could be detected or any perceptible wear, and as the wheels run in the same direction the friction is reduced to a minimum. The experimental boiler was put down early in March, and has since then been daily at work supplying the steam for the author's works, thus affording daily opportunity of trying various experiments, the fans having been fixed from the first as the fans having been fixed from the miner during the past year is by no means satisfactory." He thinks that the coal tra opportunity of trying various experiments, the fans having been fixed from the first as a permanent thing. Special apparatus has been in use during the experiments for taking the temperature at various points measuring the cubic feet of water evaporated per pound of coal and per foot of fire-grate. The author considers that these latter are more certain indications of efficiency than the horse-power per foot of grate which is

usually recorded. In comparing the three systems of ordinary forced draft, the French boiler and the author's induced draft, it is necessary to say that the temperature and draft have not been given for the forced-draft boiler, because no information on the subject is obtainable. It may, however, be noted that in Mr. F. C. Marshall's boiler trials of 11/2 hours with forced draft he records temper atures averaging for the stokehold 76.50° and for the uptake 1180°. In this case also the water was taken per pound of coal as 8.56 pounds, from and at 212°, and coals per square foot of grate at 118.1 pounds. Com-pare these with the results obtained by induced draft—a temperature in the uptake of 450°, and water 12.25 pounds per pound of coal, and 21.92 pounds of coal per square foot of grate. The enormous temperature in the uptake under the forced-air system is of the highest importance, not only on account of its danger, but as proving how little duty had been extracted from the coals, and thus

most. To the same cause is to be attributed the vast quantity of dust and cinders blown furnace entrance and blowing into it. The appliance by which the author accomplishes this result consists of a pair of fans placed in the base of the funnel, one on each side of the uptake, and mounted on a shaft carried through the uptake in an iron casing. The uptake is fitted with a dumper, which is service on long yayages is agrident.

> system results in diminishing economy as the blast is raised, and there is a maximum pressure after which it is difficult to work at all, the induced air, on the contrary, gives an increase of results and economy from increased draft, with no limit but the convenience of obtaining high speed of fan. The gases being drawn through the tubes instead of forced are properly consumed. instead of forced are properly consumed, and there is no discharge of ashes through the tubes. So complete is the combustion that, to the author's surprise, the quantity of coal used does not increase at anything like the proportion of the increased efficiency. The annexed table shows respectively the results of full-speed trials with natural draft and induced draft :

TABLE 1.-Natural Draft on Full-Speed Trials

	H M. S. Triumph.	H. M. S. Grinder.	H. M. S. Boadicea.	H. M. S. Sultan.	Marine boiler at Portsmout dockyard.*
Air consumed per pound of coal Air consumed per	192.51	167.42	264		870.64
sq. foot of fire- grate per minute Pounds of coal con- sumed per sq. ft.	86.7	80.7	86.88		94.61
of fire-grate per hour Temp'ture in fur-	27.058	10.98	19.74	.,,, ,	15.28
nace	1,834°	1,800°	1.850°	1,8920	
Temp'ture in tubes		600°	442°	736°	
Tem'ture in smoke box Tem'ture in fun-	736°	700°	700°	786°	
nel		780°	800°	810°	
lb. of coal at tem- p'ure of feed 212°					10.8
Temp'ture of feed- water					50°

In conclusion, the author is desirous of drawing the earnest attention of engineers drawing the earnest attention of engineers to the necessity of balancing the supply of air to the quantity of coals to be consumed. Without attention to this, both economy and efficiency are sacrificed. If too little air is supplied the gases pass off unconsumed, and if too much is forced in the gases are driven off before they have time to be consumed, fuel is wasted and the temperature lowered.

Coal in Ohio.

In his report on the coal mines of Oh Thomas B. Bancroft says: "The record of improvement in the mines of the State du improvement in the mines of the State during the past year has kept pace with that of the preceding year, notwithstanding the adverse condition of the trade. During properous periods and when operators are realizing a fair profit upon their output it much easier to secure needed improvement in mines than during seasons of depression when a heard to routh to his view is forced area. in mines than during seasons of depression, when a hand-to-mouth policy is forced upon the owners and the necessary expense attending a full and proper improvement becomes burdensome." The inspector then goes on to say that "the condition of the coal trade during the past year is by no means satisfactory." He thinks that the discovery of natural gas at Pittsburgh and elsewhere has had a depressing effect upon the coal trade in Ohio, that discovery alone

made by each miner during the year was 201 days, an increase of 2 days over 1384. The mines that employed 10 men and upward produced a tonnage of 7,816,179, and of this amount 6,635,029 was lump and 1,181,150 was nut. Perry County produces 1,181,150 was nut. Perry County produces about 16 per cent. of the coal mined in the State, while more than 35 per cent. of the total output comes from the Hocking Valley region, comprising the counties of Athens, Hocking and Perry. The counties of Tus-carawas, Stark, Summit, Wayne and Medina produce over 13 per cent. of the whole, while Jackson and Belmont produce 10 and 9½ per cent. respectively of the whole. In spite of the depressed condition of the iron trade the quantity of iron ore brought to surface was only 16,705 tens less than in

	Blackband. Tons.	Hematite Tons.
awrence		82,691
lackson		64,126
Columbiana		14,182
Scioto	*** ****	12,842
Perry		11,700
Vinton		8,036
Jallea		119
uscarawas		
lahoning		
Trumbull		
Total	70,985	188,646

*A paper read before the British Society of highests by W. A. Martin.

*A martin.

*A martin.

*The flue of this boiler led into the factory stack, producing furnace draft at the rate of 900 feet per minute.



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THE WEEK.

The Glass Blowers' League having taken action opposed to the employment of apprentices, the Glass Manufacturers' Association at its semi-annual meeting, held in Long Branch last week, passed a resolution declaring that such action is arbitrary and opposed to the interests of all concerned, and suggesting the expediency of establishing a training school for glass blowers.

The Berlin National Industrial Exhibition scheme threatens to collapse. As many of the chief German manufacturers oppose the project the Federal Council decline to grant the required subsidy of £120,000.

A cable to Brazil complete and in working order by January next is promised by a company just organized, with H. K. Thurber as president. The cable will go from the United States to Hayti, thence to Curacoa, and from there along the Venezulean coast to Cayenne, in French Guiana. From there the cable will be continued to Para, where it will communicate with the Government land lines of Brazil.

A boiler which exploded in the shop of death of two little children. The cone weighing a ton, was thrown 300 feet in the air and fell some distance from the factory.

According to carefully prepared statistics the sugar crop of Cuba this past season amounted to 690,779 tons, against 631,967 tons the previous year. Profits will be seriously affected by the prevailing low

The value of French imports during the last six months decreased 23,000,000 francs, while the exports increased 42,000,000 The Treasury receipts fell off francs. heavily, chiefly in consequence of losses in the revenue from sugar duties.

The United States marshal in Richmond, Va., on Thursday served notice on the officers of the Richmond Typographical Union and the editor of the Labor Herald of that city, prohibiting them from publishing in that paper or elsewhere the names of persons who are patrons of a boycotted firm in Richmond which employs non-union printers.

Judge H. L. Bond, of the United States Court, issued the order in Baltimore the previous day. The order prohibits the persons enjoined from advising or inducing, publicly or privately, others to boycott the firm. This order of Judge Bond's is the most far-reaching ever issued in the direction of preventing the boycott.

A movement has been inaugurated for the establishment of a large cotton market at Bremen to enable German consumers to draw their supplies thence instead of from Liverpool and Havre, as at present.

The chief of the Bureau of Statistics reports that the total number of immigrants arrived at the ports of the United States from the principal foreign countries during the 12 months ended June 30th ult. was 328,917; for the previous year, 349,000.

The French Admiral Lafont, in a statement made before the Chamber of Deputies. boasts respecting the condition of the navy that in case of war he should have no doubt of success, "even though the war were directed against Great Britain."

The Plymouth County jail, in Massachusetts, is boycotted, or rather the contractors who agreed to furnish materials for the employment of prison labor, they being unable either to dispose of the manufactured products or to obtain transportation.

Traffic on the Lake Superior ship canal is this season larger than ever before. The report for June shows that the aggregate registered tonnage passed through the locks was 672,008 tons, and the amount of freight transported was 668,417 tons. The registhat of ponding month last year by 191,676 tons. and the freight tonnage by 156, 167 tons.

King Kalakaua, of the Hawaiian Islands, is not, according to accounts lately received, a successful ruler. His weakness is said to be of a pecuniary nature, not to speak of half the usual average. The normal yield other failings. A correspondent who relies for his statements upon an official who spent many years on the islands, says: "The man | Coast, only about 280,000 bales. who is credited with the greatest influence over Kalakana is Walter M. Gibson, the Prime Minister. Gibeon is an adventurer of the type often found in the South Sea Islands. He is an American, who, while in Batavia many years ago, came near involving the Dutch Government in a war with the United States. In 1852, while in Sumatra, he instigated a rebellion against British rule, and was forced to fly under cloud of night. Mormonism was then looming up, and after he reached New York he went out to Salt Lake and cast in his fortunes with Brigham Young. It had been one of Brigham's dreams to found a strong Mormon colony on the Sandwich Islands, as a refuge to which the persecuted saints could flee should they ever be driven from Utah. In Gibson he found a man after his own heart, and Gibson was accordingly sent out to Honolulu to found the settlement. He converted a large number of natives, charging commission of \$5 per head, and religiously u rned over the coin to Brigham. With the struck fire on account of the great friction. and that only possible while the Govern- private concerns.

tract of land on the Island of Lanoi, and planted it to sugar. He added to his original possessions many thousands of acres of years' lease from Kalakaua at a merely nominal rental. Ever since Kalakaua was the throne, but of late years he has thrown off all disguise of secrecy, and he now holds thing to do with it." a half-dozen lucrative offices, and is the real governing power."

The total export of white-pine lumber strikes. from the port of New York, reported by the New York Export Lumber Company, for the six months ending June 30, 1886, was 22,794,000 feet, against 32,794,000 feet in 1885 and 34,873,000 feet in 1884.

The discussion of the apprenticeship system in the master painters' convention, held in Philadelphia last week, presented several interesting phases. The subject of grading workmen was treated in a paper read by B. S. Mills, of Chicago, and J. G. McCarth, also of Chicago, advocated the use of cards of proficiency, which was agreed to. John Patteson, of Philadelphia, argued that nothing would benefit the association Joseph Fassett, Wellsville, Ohio, caused the like the apprenticeship system. A motion was adopted to make the term of apprentices' service five years. A discussion of the benefits to be derived from the establishing of trades schools followed, A. A. Scheidler, of New York, said the great and skilled mechanics outside of a State prison. Ought not Congress to be called upon to do something about this ? He asked and urged that a committee be appointed to confer with other trade associations throughout the country to get concerted action. Technical departments could be attached to our ordinary schools, but the instructors should be skilled artisans. The convention agreed that trade schools should be established and that the organization should lend all its influence to that end.

> District No. 30 of the Knights of Labor comprises the city of Worcester, Mass., the largest district in the country, there being a membership of 110,000, and the newly appointed master workman is Chas. H. Litchman. In his report just presented Mr. Litchman disparages strikes and pleads for arbitration, but still adheres to the right of the workers to strike, because otherwise the employers would refuse to arbitrate. The report indorses the principle of profit-sharing and co-operation. "The order is higher and better than a political party and the parent of political principles, but it is only through political action that their declaration of principles and their preamble can be formulated into law." He warns them against political backs who seek to join the order for selfish ends.

> The Ferdinand Remys mill for the manufacture of rolled iron, in Dortmund, Westphalia, has suspended operations \$300,000 in arrears, which the establishment is unable to meet. The suspension is attributed to the stagnation in the Rhenish and Westphalian iron trade and the success of Englsh com-

Bids for the enlargement of the Museum of Art will be opened August 28. By making certain changes in the specifications, such as substituting galvanized iron for copper in the roofing, it is thought that the cost of the work will be reduced about \$40,000, and that the amount of the contract will be within the \$300,000 allowed by the appropriation

Another large silk mill is about being moved from Paterson, N. J., to Harrisburg, Pa., according to the Guardian. The principal cause assigned for this, as for other like movements, is the constantly recurring labor troubles which the manufacturers are anxious to escape.

Importers of textiles advise jobbers to make a quick delivery of goods on hand, to take advantage of the present low rates of freight, also to prepare for an early fall trade.

The hop crop in the State of New York this season is estimated at not more than of this State is about 190,000 bales, and that of the whole country, including the Pacific

Fears of the California vintage are said to be groundless, a crop above the average being confidently looked for.

A tunnel nearly 1200 feet in length is being constructed in Philadelphia for the new line of the Baltimore and Ohio Railroad. For 475 feet at the southern end the arching will be constructed of iron girders and riveted steel plates, upon which will be formed a surface layer of asphalt. The next hundred feet, owing to higher ground, will be of brickwork, and this will be succeeded by ironwork, as in the first sub-section. The ironwork is done by Frederick Smyth, of Baltimore.

An explosion of malt dust in Ehret's brewery set the building on fire and caused a loss estimated at \$20,000. Mr. Ehret says: 'Our millwright, Charles Stoll, has been investigating the cause of the fire. At first he believed a pebble had got into the malt.

proceeds of his enterprise he bought a large He has now made up his mind that the fire ment was able to pay either as desired by crown lands, which he holds under a 20 This dust is very inflammable, and Mr. Stoll entirely consistent with this anxiety on the taken fire the weather has been hot and the made King he has been the power behind atmosphere heavy. He thinks the electrical sents a face value more than \$30,000,000 in condition of the atmosphere may have some-

The cotton manufacturers of Georgia and South Carolina have organized to resist

The Massachusetts State Board of Arbitration, as authorized by the new law, consists of Weston Lewis, of Boston, treasurer and manager of a rubber company, and Richard P. Barry, a member of the Knights of Labor, a native of Ireland, but for 33 years a shoe manufacturer in Lynn.

The Savannah steamship Gate City ran ashore on Naushon Island, coast of Massachusetts, and was abandoned to the underwriters. Subsequently she was raised by placing canvass under her bottom and pumping the water from her compartments. A large portion of the cargo will be saved and the vessel be placed on dry dock.

The meat-packing firms in Chicago are re ported to have formed an alliance for mutual protection and resolved to return to the 10hour system August 1. If the men refuse to work on the old system, it is asserted that important question is how we can make the houses will close and remain closed until their employees come to terms.

> The Mormons at Salt Lake contemplate enlarging their system of irrigation by building a third ditch 115 feet above the city, and using two hydraulic rams having a combined capacity of 40,000 gallons each min ute to raise the water to the required hight. doubling the tillable area of their territory.

> The foreign trade in canned goods is rapidly developing on the Pacific Coast and the business promises to reach very large proportions. Orders have been placed in San Francisco recently for shipments to Bankok, Calcutta, Assam and Australia. The isthmus also is taking large quantities, and the West India and South American trade is constantly growing.

The New York superintendent of buildings submits statistics showing that during the past six months the estimated cost of new edifices of one kind or another for which permits were granted on Manhattan Island amounted to \$27,478,858. Of these \$14,420,-500 were for five-story flats, \$1,543,500 for factories and workshops, \$1,082,050 for office buildings; places of amusement, \$378,-015; churches, \$179,500; hotels and boarding-houses, \$841,000: schoolhouses, \$352,-950; tenements under \$15,000, \$3,437,000. Should the same activity continue until the end of December next the amount invested for the entire year in undertakings of this character is estimated at \$74,957,716, or \$29,383,703 in excess of that of 1885.

An industrial exhibition in Newark, N. J is talked about as an object that should be attained. Since the last exhibition the local population has increased from 110,000 to 160,000, and business interests have increased in proportion. The fact that the city is the seat of two large electrical machinery factories, not to speak of other manufactur ing interests represented there in great variety, would be sure to enlist a general in-

A Pittsburgh manufacturer consumes one carload of lead every week as an ingredient in the production of glass lamp chimneys.

Philadelphia rejoices in the fact that the total imports at this port have increased in value from \$29,919,019 in 1885 to \$36,561,799 in 1886, while the duties collected on imports have increased from \$12,491,513 to \$14,661,-896 in the same period. The cost of collection has at the same time been considerabl reduced.

The important sense in which the public welfare is dependent on the ability of the United States Treasurer to maintain silver at par appears in recent discusions between Treasury officials and members of the Senate Finance Commit tee. The bondholders, Assistant Secretary Fairchild said, whether banks or individuals, would probably be the smallest losers by a depreciation of silver, and as a class were better protected and better pre pared for the ill effects of bad financial legislation or administration than any other While the Government was conscious of its obligations to these classes, their protection was a very unimportant element in the opposition to legislation tending to place the loss to these classes from the depreciation of silver could probably be more easily borne or serious loss to the people, East and West, North and South, in whose hands the silver who pay are paid in silver, and whose per-

was caused by ignition-possibly spontane- its creditors. The gravity of the situation, ous-of the very fine malt dust which col. he said, had never been overestimated. lects in the boxes at the foot of the elevators. The opposition to the surplus resolution was has noticed that at times when such dust has part of the Administration. As the Government's product of silver dollars repreexcess of the purchase price, the Government could not pursue a more honest course toward the people, or take better means of protecting them, than by retaining the difference between this bullion and declared value, in the nature of a trust fund, to guard the holders of the silver dollars from being the losers by the Government's so-called gain.

> A Montreal merchant recently returned from the Pacific Coast reports respecting the salmon fisheries that a large business has heretofore been done on Columbia River, but that the salmon are deserting that river, so that the American markets must look to British Columbia for their supplies. The total production of the British Columbia canneries is from 100,000 to 120,000 cases a year, the principal demand for which is from the Eastern States. Were it not for the high duty on tin cans the Canadian Pacific Railway would do a large business in transporting the products of the canneries to the most available markets. The Frazer River canneries are largely owned by Americans.

The Illinois Central shops, in Chicago, have begun work on 10 Mogul freight engines, with 18 x 24 inch cylinders and 56 1/2 inch driving-wheels.

The discovery of rich copper ore in Searcy County, Ark., is reviving a general interest thereabout in copper mining.

A Japanese Prince in New York is the latest foreign novelty. He is said to be chiefly interested in military and naval affairs.

W. C. Lumsden, of the firm of Tappy, Steele & Co., proprietors of a large foundry in Petersburg, Va., met with an accident on Saturday which resulted in his death in a few hours. He had gone over to the yard of the Petersburg and Weldon Railroad to see about the shipment of a carload of iron, and while standing between two cars in conversation with a friend was fatally crushed. Mr. Lumsden was president of the Petersburg Benevolent Mechanics' Association and was widely known at the North.

Experts in the business affirm that an electrical subway adequate to all requirements can be built in New York City for \$4,000,000; that the rentals would be little less than \$1,000,000 per annum, if the law is enforced, while the cost of maintenance would be nominal.

The four massive stone towers supporting the Niagara Suspension Bridge are to be replaced with iron, as the stone masonry is disintegrating. By erecting a temporary framework of iron alongside the towers to receive the cables, it is believed the transfer can be made without much interruption of travel. position with hydraulic jacks. The new

phia are unusually heavy. Last week they amounted to 4,628,339 gallons. Since January 1 the exports have been 81,406,304 gallons, while at the same period of 1885 they were but 78,406,719 gallons.

The great plateau between the Rocky Mountains and the Sierra, comprising the Territory of Utah and the State or Neveda, is apparently destined to become the greatest cattle range in the country. Already immense tracts of land, some embracing nearly owners of large herds in Texas and other The cattlemen are the natural precursors of small farmers or husbandmen.

Issuing a charter to the National African Company is the last act of Great Britain looking to the extension of its empire. The inevitable effect, it is predicted, will be to make the Niger practically an English river. The capital of the new company is authorized as £1,000,000, and the stockholders are "rights, interests, authorities" already acquired or yet to be acquired in the basin of the River Niger.

Commandant McGee, of the Government Ordnance Board, now in charge of the Allegany arsenal, is of the opinion that only a thrashing by some foreign power will arouse Government upon a silver basis. While the Congress to the necessity of preparing powerful machinery for the manufacture of war appliances suited to coast defense. Private averted, the real cause of anxiety was the manufacturers are not likely to enlarge their plants to the requisite capacity by erecting hammers, cranes, &c., at all comparable to dollar circulation is held; the individuals the enormous tools employed by Armstrong or Krupp or in the French foundry at sonal holdings of money and small savings- Cruzat so long as the present uncertainty bank accounts would directly feel the loss exists with reference to Government confrom a depreciation of silver. The responsities. Commander McGee is of the opinion bility which the Government sought by that if forgings were made by private firms every means in its power to meet was to the shops could be utilized to assemble the protect and uphold the value of this coin in pieces and give any finishing touches necesgathered in the tithes for the church, but, been carried along with it to the steel roll- the hands of all the people. This was only sary. The Government would be the gainer, like Sam Brannan in California, he never ers, where the malt is crused, and there possible while the two metals were on a par, however, if all the contracts were let to

English Letter.

(From Our Regular Correspondent.) LONDON, July 12, 1886.

THE SITUATION

may be said to be a trifle better at the moment than it was at the date of my last letter, inasmuch as the elections have made great progress, and there now remain only some 90 members to elect out of a total of 670. As you are well aware by this time, Mr. Gladstone has been handsomely and convincingly beaten all along the line. Under the circumstances, manufacturers (who are largely Conservatives) freely express the hope that the so-called Grand Old Man will retire from politics and save the country from the trouble and expense of disillusioning him further. Quite apart from party politics, I believe I correctly represent the views of many business men in saying that Mr. Gladstone's retirement would be a distinct advantage to our trade, seeing that he is a perpetual dreamer who "dreams dreams and sees visions" which are utterly impracticable and incapable of practical realization so long as he has only weak, ordinary mortals to deal with. Rightly owrongly, a large section of business menespecially in London-lack enterprise and daring when Mr. Gladstone is in power, simply, they say, because one never knows what he may do at home, while there is the absolute certainty that he will get us into some sort of trouble abroad. Politics, I know, are not the proper food for readers of The Iron Aye, but I give you what I believe to be the facts, and leave you the deave that it is the state of the proper food for readers. to draw what inferences you please from them. It is a certainty, at all events, that them. It is a certainty, at all events, that securities are rising in value as a conseuence of the Gladstonian discomfiture. Bank of Ireland stock rose 20 in one day. and most of the Government, railway, &c.,

and most of the Government, ranway, &c., stocks have also gone up.

At the quarterly meetings, of which I will give brief reports presently, there was not a great deal of business done, but the tone was not worse, and many merchants, &c., spoke in very hopeful tones of the near This hopefulness was emphasized by the issue of the Board of Trade for June, showing only a nominal decrease in the value of our imports, while the exports are given at nearly £1,000,000 ahead of the same month of last year. As you will see lower down, a portion of the augmented exports was due to the United States, whence current report says there nu merous orders of late and at present.

The weather has now changed to most welcome rain, which comes too late to damage the hay, but in the nick of time to ben-efit the garden and field crops. To wheat, oats and barley it is invaluable

THE IRON MARKET

being still without noteworthy features has been practically relegated to a second place during the elections. Taking all things into consideration, the difficulty with which nominal quotations for special Scotch brands are maintained, and the transactions on a lower basis which are taking place between some second holders and buyers, it is premature to speak of a change for the better, particularly as the attempts recently made to force a revival have signally failed. Moreover, it cannot be overlooked that while the evil day in some quarters has been postponed the aggregate output of iron and the total of stocks are as unsatisfactory as before, and that necessarily until these The cables will first be lifted from their for the better is improbable. Glasgow warposition with hydraulic jacks. The new material is being prepared at iron works in Detroit, and the job is expected to cost about \$40,000.

The material is being prepared at iron works in 29/3 to 29/6, according to period of delivery. On the West Coast the position is described as depressing, not because prices have The exports of petroleum from Philadel-hia are unusually heavy. Last week they mounted to 4.628.330 gallons. Since Jan-tions for mixed lots are still nominally at 42/, but the actual selling price is hardly known, each sale being more or less determined by special circumstances. In the manufactured departments the same condition of inactivity can only be chronicled, with rates as before. In galvanized sheets and wire, taken altogether, the volume of business done is a trifle better, but the prices are still very low. For old iron the inquiry is slightly in advance of the last week or two but, though recent prices still rule, business 250,000 acres, have been purchased, and construction of large herds in Texas and other from Glasgow to New York by ordinary steamer continue steady at from 4/6 to 5, Southwestern States are looking for ranges in this wide section of natural pasture land. direct for Melbourne wharf to follow the Dunloe, and in a few days fighting rates are expected to prevail. Steel continues in fair demand, although less business is arising from the inquiries before the market than might be expected. Steel sleepers are less ught after for the time being, and makers with contracts in hand nearing completion are beginning to feel anxious for further work to keep their places going. Steel rails are quiet for the moment, but makers empowered by the charter to hold and retain generally report themselves tolerably well employed, although prices are very low An upward movement is more manifest, and £3. 15/ is being freely mentioned in place of the £3. 10 rate. No fresh inquiry is be-fore the market, save one for 18,000 tons required for the railway in Western Australia, promoted by the West Australian Land Company, Limited.

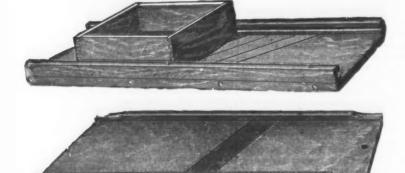
THE QUARTERLY MEETINGS.

At Middlesboro' on July 6 the attendance vas no larger than at the usual weekly markets, and very few strangers put in an ap pearance pearance. Merchants continue to quote 29/4½ P ton for this month's deliveries of G.M.B., and as they find consumers ready to pay the figure they seldom let any iron go at less, though some buyers say they can purchase a little at 29/3. At Wolver-hampton on July 7 the meeting was held under circumstances unfavorable to the transaction of any large amount of business. The Lilleshall Iron Company, Shropshire, took the lead in crucial pig-iron quotations by annuncing that they should make no alterations, and that their price for hot blasts remained at 52/6, with a concession of 2/6 of ton to some buyers. Cold-blast pigs they quoted firm at 75/ ? ton. Staffordshire all-

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mine makers followed this lead, though a few declined to sell at anything less than 55/, and occasionally 57/6. More business proportionately was done in second and third class pigs than in all-mine sorts. Part mines were quoted 35/@40/; common foundry, 30/@32/6, and common forge, 27/6@inial and South Americal trade shortly in consequence of the higher prices realized in second of the higher prices realized in 30/, which is a reduction upon the price which ruled at the January quarterly meetings of 5/% ton. The Willingsworth make was quoted for second-branded qualities. The the marked iron works were not of a very encouraging character. There was more business doing in second and third class bars. become £4. 15/@£5. At Birmingham on July 8 the expectations of manufacturers were not pitched very high, and they were therefore not disappointed by the smallness and scarcity of orders for general iron. Production in all departments has been greatly curtailed of late, and during the recent hot weather there was in many mills an absolute suspension of operations. Stocks consequently are bare, and makers are in some cases in arrears with their orders. Galvanizers' sheets were in somewhat better demand in view of the improvement of business in that branch, which is generally attributed to the rise in colonial produce, and especially wool, but, though galvanized sheets ruled 5/ higher, the competition is apparently too keen still to admit of any advance in black sheets. to admit of any advance in black sheets. The American demand for scrap iron continues brisk, and both for Canada and the United States there is a large business doing in tin plates, for which the standard quotation now is 13/ for I C coke, or about 3d. less than at the previous quarterly SCOTCH PIG IRON

is fairly steady, all things considered, but is generally without special changes to note in respect of values. There is not much business being done in warrants or in makers' brands. There are now 85 furnaces in blast in Scotland, against 91 a year ago. In Connal's stores the stock amounts to 783,888 tons (an addition of 3511 tons last year), as against 601,555 tons this date 1885. Shipments to date are 36,578 tons in arrears. while the importations of Middlesboro' pig iron into Scotland are 25,497 tons in arrears.

Deliverable	e alon	28	ld	le				No. 1.	No. 8.
Gartsberrie, a	t Glas	go	W					 48/	41/
Coltness,	8.0		۰					 46/6	48/
Langloan,	0.0							 48/	41/
Summer!ee,	0.0							45/6	41/
Calder,	9.6							 46/	41/
Carnbroe,	9.0							 43/	89/6
Clyde,	8.6							42/6	89/6
Monkland.	9.6							89/6	86/
Quarter.	9.6							89/6	85/6
Govan, at Broo	miela							89/6	86/
Shotts, at Leiti	h							 44/	43/
Carron, at Gra								44/6	44/6
Kinneil, at Bo'r								43/	437
Blengarpock, s								42/6	39/6
Eglinton.		64		_				39/3	86/3
Dalmellington.		6.6						40/6	887

is very dull, owing to the increase in stocks shown below. Quotations for G. M. B., f.o.b.

n '	ľ	es, are:			
No.	1	Foundry	82/8	Mottled 28/	
0.6	140	49	81/8	White 27/	
6.6	8	66	29/6	Refined metal 46	Ì
8.6	4			Kentledge 83/	
0.6	4	Forge	28/6	Cinder 30/	

The official returns of the Cleveland Ironmasters' Association for June give the sub-joined particulars: Total make of pig iron, 202,131 tons; stocks, 689,185 tons; ship-ments, 63,961 tons. There was a decrease of nearly 9000 tons in the make, an increase of some 19,500 tons in stocks and a decrease of some 7000 tons in shipments when compared with May.

HEMATITE PIG IRON

is reported weak and unaltered in some quarters, but I bear of an undercurrent of strength which, if verified, would be likely to harden values before long. Mixed numbers are about 42/ 1 ton, while West Coast makers' brands are :

	No. 1	No. 2.	No. 8.
Cleator	42/3	42/	41/9
Lonsdale	42/	41/9	41/6
West Cumberland	42/	41/9	41/6
Lowther	42/	41/9	41/6
Distington	42/	41/9	41/6
Solway	42/	41/9	41/6
Maryport	43/	41/9	41/6
Harrington	48/6	42/6	41/6
THE BOARD OF T	RADE	RETURNS	

£29,101,941, as against, £29-236,984 in June, 1885—a decrease of £135,-043 only. The aggregate value of last month's exports was £18,536,076, compared with £17,717,289, or an increase of £818,-787 over the figures for the same month of last year. The quantity of steel and iron of all kinds exported last month was 335,124 tons, of the value of £2,129,939, as against 208,579 tons and £2,026,470 in June, 1885. There was thus an increase of 37,000 tons in quantity, much of which was in respect tin plates, scrap iron and unwrought steel.

TO THE UNITED STATES

the chief items of export were as set forth

Articles.	Month of June, 1885.	Month of June, 1886.	Month of May, 1886.
Alkali, cwt	210,069	199,478	304,884
Hardware and cutlery, £	35,868	21,587	21,710
fron-Pig, tons	36,687	10,374	26,911
Bar, angle, rod, &c., tons.	181	385	253
Railroad, all, tons	8,884		1,459
Hoops, sheets, plates, &c.,			
tons	3,926	5,878	672
Tin plates, tons	31,821	18,181	22,090
Cast or wrought, tons	97	31	1:28
Old, tons	2,506	996	4,877
Steel, unwrought, tons	4,518	860	8,522
Lead, all sorts, tons	98	52	1
Steam engines, &	3,581	1,971	6,424
Other machinery, &c., £	45,722	19,807	84,808
Tin, unwrought, cwt	223	42	919
Special return-			
Steel rails, tons	3,184		1,453

THE HARDWARE TRADES.

sequence of the higher prices realized in this country for produce, and especially wool, and some good orders for heavy hardof pigs was quoted 32/6, and Bradley's Darlaston pigs, 35/. In the finished-iron trade marked bars were redeclared at £7.

12/6 for the Earl of Dudley's make, £7 for the make of the other list houses, while £6

States and Canada, where a good fall trade is confidently looked for, but none of the reports as to the amount of business doing at Continental markets show much life except Spain. At Sheffield the turn of the half year and the political contest have made the country trade almost a blank during the last week or two, and it is difficult to find any ness doing in second and third class bars. Common bars and hoops showed a reduction on January prices of £5 \$\frac{1}{2}\$ ton, the £5 @ branch of manufacture which is being well £5. Io/ of that earlier period having now sustained by home orders. The United become £4. 15/@£5. At Birmingham on States and Canada after a temporary lull

> out noticeable change in the position from that noted in my last report. I quote good ordinary IC cokes 13/9, f.o.b. Liverpool. At Liverpool there would have been more business does if my last report. ness done if makers were disposed to book lines for forward delivery at 13/6 IC for coke tins and Bessemer steels, also Siemens steels at 6d. or so more than Ressemers. But they hesitate to commit themselves to such an extent in the face of an advanc-ing tin market. The inquiries for charcoal tins and ternes are not by any means numerous. There is plenty of room for im-provement in both of these as regards the demand and price. The prices for the various grades of charcoal tins seems to have settled down to 14/6 and on to 15/6 IC, and best charcoal tins 16/ @ 17/ IC. The large number of ternes that are now offering tends to keep the prices of those still at a low level, and 12/6 @ 13/6 IC is the general figure, though some few of the better class brands command 14/@ 14/6 IC Coke tin wasters are in good demand at 12/6 and 12/9 for Bessemers.

Trouble in the Rensselaer Rail Mills Settled.

The New York State Board of Arbitration have decided the controversy in the Rensselaer Rail Mills of the Troy Steel and Iron Company. The heaters and helpers presented the following grievances:

1. Assistant heaters request an increase

from 12 cents to 16 cents per ton for hot steel, and from 12 to 20 cents per ton for cold steel. The helpers request an increase from 10 to 13 cents per ton for hot steel. and from 10 to 16 cents per ton for cold

steel. 2. We request that the Troy Steel and

Iron Company pay us our wages semi-monthly instead of monthly.

3. We request that the company provide a suitable place for men to wash and change their clothing.

4. We request that the gates be left open during working hours for the free ingress

and egress of employees.

The conclusions and recommendations of the Board of Arbitration accepted by the Troy Steel and Iron Company are as follows:

1. That the assistant helpers shall receive an advance from 12 cents, the present price, to 14 cents per ton on hot steel, and from 12 to 15 cents on cold steel. That helpers should receive an advance from 10 cents, the present price, to 12 cents on hot steel,

the present price, to 12 cents on hot steel, and from 10 to 13 cents on cold steel.

2. While the board are of the opinion that as a general principle wage earners should receive frequent payments of money due them, their judgment is, upon the evidence submitted, that semi monthly payments are not expedient in this case.

It is recommended that the company provide for employees suitable cover and facilities for washing and changing their

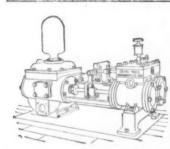
and that a continuance of the same hour cught to be satisfactory

> Hall & Carpenter, Philadelphia, have re-cently issued an advertisement of Hall's G. D. C. IC Ternes, in the shape of a miniature edition of a box of this brand of roofing plates. The box measures about 4 x 3 inches, and appears to be made of elm. which we suppose has done previous duty as a casing for full-grown plates. The boards of top and bottom are separated in the regulation manner, so as to expose a strip of tin plate between. The sides of the boxes are branded as follows: "Hall & Carpenter," "Guaranteed Double Coated," "Hall's G. D. C. Terne IC" and "Best Best Charcoal." Viewed from either an æsthetic or an utilitarian standpoint this embryo box of plates is a decided success, for artistic-ally it is an excellent reduction of a largesized box, and, further, it will prove very useful as a paper-weight.

Through an oversight in our last issue we failed to credit Mr. Oberlin Smith, of Bridgereacted from Mr. Oberim Smin, of bringe-ton, N. J., with the authorship of the paper entitled "Inventory Valuation of Machinery Plant." The paper, as we remarked, was presented at the last meeting of the Ameri-can Society of Mechanical Engineers.

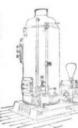
M. P. Andoin, writes to the Revue Indus-trielle claiming priority of invention on the use of chrome ore as furnace fining. He states that he exhibited chrome brick at the NEW AND BEAUTIFUL DESIGNS JUST OUT.

In London there is little to report specially regarding business in London during the past week. The situation so far as the home melted several hundred grams of platinum trade is concerned remains on the whole without affecting the furnace.



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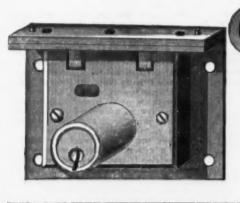
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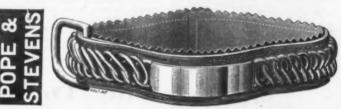
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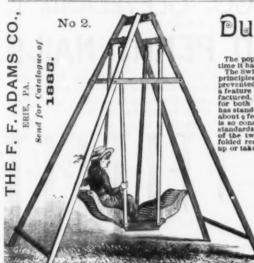
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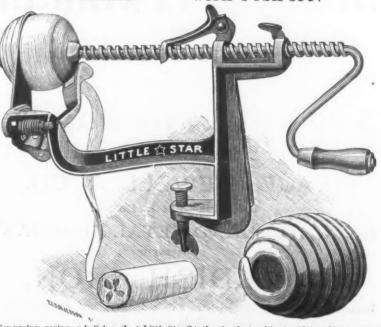
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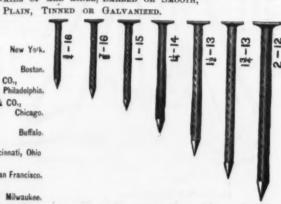
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	25.50	o 136 i o 9-16 o 7-16	nches. in	. base .extra .extra	2.96 , 0.26 , 0.54	RING S	inch	ext	ra, 1.0	44
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eds, when not in complete Boller sets, to be 566 pound extra on each above grade, thickness and No Steel to be sold as Marine Boller Steel axept Boller grade. Tank Steel, not stamped, 569 per less than Shell Steel, subject to same classifi-Ind less than Shell Steel, subject to same classifion.

Miscellaneous Cast Steel.
gerand Auger Bit. Se Roller and wasons and wasons so gerand auger Bit. Se Roller and wasons so gerand Auger Bit. Se Roller and wasons so gerand Auger Bit. Se Roller and Selection. Segacia Selection Select Bolls and Castings.

Prace and Floor Plates.

In Rolls over 12 inches diameter and Rolls over 12 inches diameter and under ill Plinons over 12 inches diameter and under ill Plinons 12 inches diameter and under usen and Rolling Mill Castings not otherwise pecified.

Indies and Coupling Boxes

ueezer Castings.

ueeer Plinons and Wheels

ide Plates.

Orange Mineral, True, in 100 h kegs, net 60 days and not subject either to rebate or freight equalization.

Terms: Note or acceptance at 60 days; or less 24 5 for cash if paid within 15 days from date of invoice on lots of 500 h and over.

Freight equalized with all points where White Lead is made.

Window Glass.

Window Glass. Discount, 75 % Single Strength; 75 & 10 % Double Prices current, * box of 50 feet,

United		Size	А	Aa.	Α.	В.	C.
25	6 x	8 to 10 x	15	\$8.75	88,00	87.50	\$7.0
39	11 x	14 to 15 x	24	9.25	8,500	8,00	7.2
48	16 x	24 to 20 x	28	10.75	9.75	8.75	7.7
54	15 x	34 to 24 x	30	12.25	10.75	9.00	0.00
60	26 x	28 to 24 x	36	13,00	11,50	9,75	0.01
70	26 x	36 to 26 x	44	14.50	13,25	10.75	
86	26 x	46 to 30 x	50,	15.00	14.00	11.25	
84	30 x	52 to 30 x	54				
90	30 x	56 to 34 x	56	2011			
94	34 X	58 to 34 x	det	+80+		****	
100	36 x	00 to 40 x	60	2015	4.6 -	****	
25	A w		15	18,25	12.25	11.25	10.5
34	NI X	14 to 15 x	24	14.50	13.25	12.50	11.1
48	16 x	24 to 20 x	28	17.25	15.75	14.00	
54	15 x	34 to 24 x	30,	19.75	17.25	14.50	
60	26 x	28 to 24 x	30	21.00	18.50	15.75	0.0
70	26 x	36 to 26 x	44	23,25	21,25	17.25	
80	26 x	46 to 30 x	50	24.00	22,50	18,00	
164	30 x	52 to 30 x	54	25.75	23, 25	19.25	
90	30 x	56 to 34 x	56	27.75	25,00	21.75	2.6
94	35 x	58 to 34 x	60,	29,25	27.75	24,00	
100	S6 x	60 to 40 x	60	33,25	30,00	27.75	
Si A glas	zes s n ad ss ni hes i	bove - iditional ore than n length, will be	60	tra for will b ide. A ing me	30,00 e cha il sizo ore tha	27.75 5 inc rged f a abo in 81 u	heror

stings, light
stings, heavy.

White and Hed Lend.

We White Lead in Oil, in Kegs. In lots of
d upward, 7¢ ? * : in lots less than 580 %,
het; in 25-% cans, packed in 100-% cases,
12½-% cans, ie, over keg price; in 1 to 5 %
sorted, in 100-% cases, 2½-¢ over keg price,
ure Dry White Lead in kegs, ? %

""" are Red extra bright and fine, in kegs. . 7

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"" are Litharge, covered, ext, fine, in kegs. . 7

"" are Litharge,

THE STANLEY WORKS



Wrought Iron

BUTTS, HINGES DOOR BOLTS

FACTORIES: New Britain, Connecticut.

WAREHOUSE: 79 Chambers Street, New York.

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POR BUTLER'S PANTRY AND EITCHES. (Pat. April 18, 1881.) Entirely new, being stamped from ne plate of steel and superior to ast-iron sinks in every particular, sing lighter, stronger and more

These sinks, being made of rought steet, will not break from eat, cold, or any cause whatever.

We furnish these sinks painted galvanized, as desired, at prices freedom from breakage consided-less than for sinks made om cast iron.



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L. M. RUBREY Mec. Co., No. Louis, Mo. Bailey, Farrella & Co., Pittsb'h, Pa., McLytosh, Good & Houtington, Cleveland, Ohio C. A. Blessing, Philadelphia, Ps. Sidney Shepard & Co., Buffaig, N. Y. Kennedy, Spaulding & Co., Syracuse, N. Y. Gleason & Bailey Meg. Co., Louis, Mc. Bobertson & Co., Baltimore, Harpers, Revnolds & Co., Md. Los Angeles, Cal. Goulds & Austin, Chicago, III. Holbrode, Merrill & Statistock, Cal.

dis solutions | 2 to 9-16 inches wide x 3 to 9-16 inch

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LOCKS, AR-PROOF SASH



No. 210, Ornamental Iron, Iron Knob, fine finish,
No. 211, Ornamental Iron, Iron Knob, fine finish,
Olympian Bronze.
No. 212, Ornamental Iron, Iron Knob, fine finish,
Pompell Bronze.
175,
Olympian Bronze.
185,
O. 213, Ornamental Iron, Iron Knob, Nickelplated.
186,
187,
Olympian Bronze.
188,
On 210, Ornamental Iron, Iron Knob, Nickelplated.
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On 211, Ornamental Iron, Iron Knob, Nickelplated.
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On 210, Ornamental Iron, Iron Knob, NickelNo. 212, Ornamental Iron, Iron Knob, NickelNo. 213, Ornamental Iron, Iron Knob, NickelNo. 214, Ornamental Iron, Iron Knob, NickelNo. 215, Ornamental Iron, Iron Knob, NickelNo. 216, Ornamental Iron, Iron Knob, NickelNo. 217, Ornamental Iron, Iron Knob, NickelNo. 218, Ornamental Iron, Iron Knob, NickelNo. 219, Ornamental Iron, Iron Knob, NickelNo. 219, Ornamental Iron, Iron Knob, NickelNo. 219, Ornamental Iron, Iron Knob, NickelNo.

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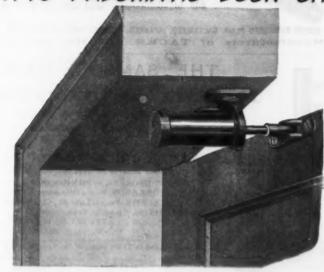
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Preside in PARKE give each. Handle

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2 as 60., to returned HAINES 13. ď that THE PERFECT DOOR SPRING.

Cheap, Simple, Durable, Effective. FOR LIGHT AND HEAVY DOORS.



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CAPAGE

BOSTON. Reported by Bigelow & Downe.

Ammunition. BARTON S hells—
Paper Shot Shells, 1st and 2d or S. G. qual. dis 25&5
Paper Shot Shells, Club, Rival, Climax. dis 40&5
Paper Shot Shells, Star Brand. dis 60
Brass Shot Shells, dirst quality. dis 60
Prass Shot Shells, Club, Rival and Climax. dis 60
Prass Shot Shells, Club, Rival and Climax. dis 60 U. M. C. & W. R. A.—P. E., 7&8 4.90 |
Anvil & Vise. 10 20 30 4.50 5.50 6.50 ... dis 25 %
Eagle, Fisher & Norris, No. 90, \$1.75; 0, \$2.25; 1, \$2.75; 2, \$3.25; 3, \$4.00; 4, \$4.50; 5, \$6.26 6, \$4.00; 7, \$6.50; 8, \$7.25; 9, \$8.25.
100 b and over 10¢ b... dis. 20 \$
Augers & Bitts.
L'Hommedieu's Ship Auger. ... dis 15 %
Jenning's Bitts. ... dis 60&10 \$
Cook's Bitts. ... dis 60&10 \$
Griswold's Bitts. ... dis 60&10 \$
Jenning's Fattern Bitts ... dis 60&10 \$
Jenning's Fattern ... dis 60&10 \$
Jenning's Fixtures. Awning Fixtures. Ax Handles. .dis 40&10 %

Bird Cages.

Hendry's Japanned.
Hendry's Brass.... Blind Hinges.—Mall. Hook, 8 holes... C sets 7.00 Blocks.—Tackie.....uis 50 q Bolts. Bornx.—Refined...... # > 104
Boring Machines. ..\$5.50 list } dis 50 Regular list
Butts.—Union Fast Joint.
Union Loose Joint.
Union Japanned Acorn.
Union Silvered Acorn.
Union Boston Finish.
Union Spiral Spring.
Wrought Brass. dis 70&10 %
dis 40 %
dis 75&10 % Carpet Sweepers.
Welcome Rubber Roll......
Welcome Cog Wheel.....
Casters.—lled and Table.....₽ dos \$19.00₽ dos 17.00dis 50&10 % Chain.
Coil 3-16.
Coil 14.
Coil 16.
Coil 34.
Coil 34.
Coil 34.
Coil 34.
Coil 34. # 3 8¢ # 3 6¢ # 3 6¢ # 3 5¢ # 3 45¢ # 3 45¢ Chalk,—White, Carpenser's.
Red, Carpenter's.
Blue, Carpenter's.
Crayons... Chisels.—Peck, Stow & Wilcox.... Underhill, Framing... Buck's Chisels. Coal Hods.—Galv'd, New List.... Japanned, New List. Racking..... ..} d≥ 55#10 ≰ Compression, Eastern Mfg. Co.: To Screw...... P dox #2.50 3.50 To Solder Coffee Mills.—New List......dis 45&10 %
Copper Rivets......dis 50&10 % dia 50&10 g

W dos \$3,80

W dos 4.50

W dos 4.50

W dos 4.56

W dos 5.60

W dos 5.80 Crow Bars,-Cast Steel Crow Bars.—Cast Steel
Cuttiers.
rocket American Shear Co.'s
Pocket Eastern Shear Co.'s
Butcher Knives, Wood's, Lap Boister, Square
'Handle.
Steak Knives.
Lap Boister, Oval Handle.
Sticking.
Skinding.
Butcher, Summa Bound Handle, Wood's...d
Bucker, Wood's...d Dog Collars.
Embossed Glit, Pope & Stevens' list.
Leather, Pope & Stevens' list.
Brass, Pope & Stevens' list. dis 40 ≤ Gem Coll, new list..... # doz \$1.50dis20 \$.\pi doz \$1.00 .\pi doz 1.50 Warner's.... Drills. -- Morse Twist Drill Co.'s. Bit stock Drills. Wire Gauge Drills..... Jobbers' and Letter Drills Drill Chucks.

Morse's Beach Patent

Morse's Adjustable... Emery. 14 kegs, P B 10 B cans, P B Enameled Ware. Enameled Kettles. Enameled Sauce P Files. American File Co Nicholson File Co

Hangers. dis 40 dis 50 dis 50 dis 20&10
 Hay Knives.—Lightning.
 \$18.00, dis 10 \$\frac{1}{2}\$

 Hinges.—Strap and T (new list).
 dis 65 \$\frac{1}{2}\$

 Providence Plate.
 \$\frac{1}{2}\$ \$5 \$\epsilon\$

 Wrought Screw Hook.
 \$\frac{1}{2}\$ \$\frac{1}{2}\$
 Hoes.-W. & C. Mfg. Co.'s.. Hooks and Staples.—Brewer's (new list). dis 70 & Hooks and Staples.—Brewer's (new list). dis 70 & Horse Nalls... No. 6 7 8 9 Putnam Pointed... \$0.34 .22 21 .20 ... 5&7 & Bridgewater... 23 .21 20 19... 30 & Knobs... dis 45 & Lanterns.—Tubulars, No. 0 ... \$\psi\$ dos \$7.50 Knobs...
Laurerns.—Tubulars, 222

Lawn Mowers.

Continental dis 50-25 2

Quaker City dis 50-25 2

Philadelphia Keystone dis 50-25 2

Lead.—Sheet. \$\mathbb{\ma Mattocks. | Ox Bows. - Extra finished and varnished ... dis 15 \(\frac{7}{2} \) 1\(\frac{1}{2} \) Picks. I. C. T. W., Adze Eye, 6 to 7 h \$13.00.... .dis 60 % Potato Diggers.

W. C. & Co., reduced list.....

Pulleys.—Acme or Excelsior, 1% in.

Acme or Excelsior, 2 in...... .dis 60&10 % Pumps.—Union Manufacturing Co. Iron Cistern... Iron Pitcher Spout Rivets.-In 5 % papers...... Genuine Swedish. S. w Blades. - Disaton . Welch & Grimth, Extra. Welch & Grimth, No. 3... Scales. - Fairbanks.
Screen Window and Door Frames.
Hart's Screen Frames, No. 1. - F
Hart's Screen Frames, No. 2. - F
Hart's Screen Doors, No. 10. - F .dia 20 % Rorews.
Wood Screens.—List February 15, 1886.
Flat-Head 1rob.
Round-Head Iron. Round-Head Brass..... Round-Head Brass.... Flat-Head Bronse... Round-Head Bronse Flat-Head, Iron... Round-Head Iron. ..dis 60 \$ Round-need from
Scythes.
Blood's Clipper Scythes.
Nolin's Clipper Scythes.
Nolin's Solid Steel Scythes
Emerson Clipper Scythes
Emerson Solid Steel Scythes .₩ dos \$6.50 ₩ dos 7.00 ₩ dos 9.00 7.00 9.00 Shears.—American Shear Co., new list.... Shet.—Le Roy... Shet.veis.—O. Ames, new list.... O. Ames, other brands, new list.... .dls 70 s Sht.vels.—C. Ames, new list.

O. Ames, other brands, new list.

O. Ames, other brands, new list.

Sinks.—Magce Patent.

dis 20 g
Sinks.—Magce Patent.

dis 30 g
Snow Shovels.

States.—Eastern Acme.

No. 5, Steel Runners.

No. 5, Steel Runners, hardened.

No. 10, Steel Runners, hardened.

No. 10, Steel Runners, hardened, Nickel
Pairt 2.00

Stocks and Dies.—King's.

dis 1026 g
Tacks.—Eastern Mg. Co.

American iron Carpet Tacks, all kinds.

Swedes iron Tacks.

Swedes iron Tacks.

Tinned Swedes iron Tacks.

Tinned Swedes iron Tacks.

American Iron Cut Tacks.

American Iron Cut Tacks.

American Iron Cut Tacks.

American Iron Cut Tacks.

Copper Finishing and Trunk Nails.

Cigar Box Nails.

Finishing Nails.

Hungarian Nails and Miners' Tacks.

dis 50210 g
Trunk and Clout Nails.

Basket Nails.

Chair Nails.

Common and Patent Brads.

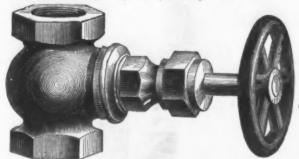
dis 45210 g
Transom Lifters. Packer's Underwood's... 'v pair Wire Fence. Buffalo Painted Barbed... Buffalo Gaivanised Barbed Wrenches... A. G. Coo's... Girard Mfg. Co. Girard Agi... "Always Ready"... Wringers.
Novelty for Common Tubs No. 2-10-in. # doz \$27.00
No. 3-11-in. # doz \$1.50
Excelsior for Stationary Tubs No. E-10.
dos \$9.00 for for Stationary Tube No. F-11.

dor with Folding Bench No. A-10.

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IMPROVED CUT NAIL MACHINES,

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TENSILE \ 56,000 to 64,000 lbs.
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WM. McILVAIN & SONS, MANUFACTURERS OF



CHARCOAL BLOOMS.

Locomotive, Fire Box, Flange and Shell Iron; Plate for Bridges and Girders; Tank and Stack Iron; Boat Plate and Iron for CAPACITY. Plates 136 inch thick to No. 14. 30 feet long. 70 inches wide. Wrought Pipe; Plate Iron for Fire and Burglar Proof Safes.

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the leading Ratchet Drill in the market. They are manufactured of the best material and in a thorough manner. The screw is protected with a round sleeve, keeping dirt and grit from cutting the thread.

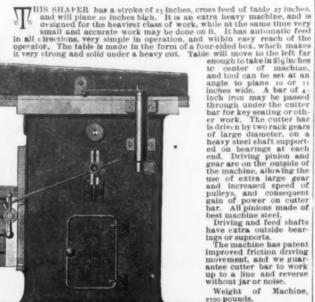
These Ratchets are made with Steel Screws, Pawls and Hardened Points. Handles and Nuts are of Norway Iron, Pawls and Ratchets of Steel, Forged, Solid and Milled Out.

EVERY TOOL IS WARRANTED.

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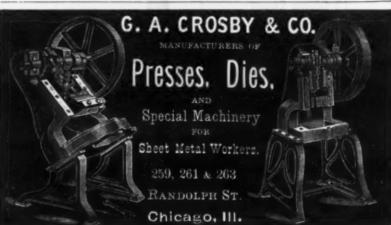
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of which we are the sole manufactor and has proved an easier and faste tooth shown in the engraving, ing, cutting peat, or any other work



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Sole Agent for the United States and

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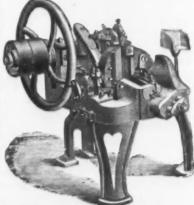
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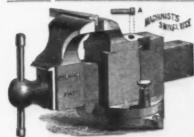
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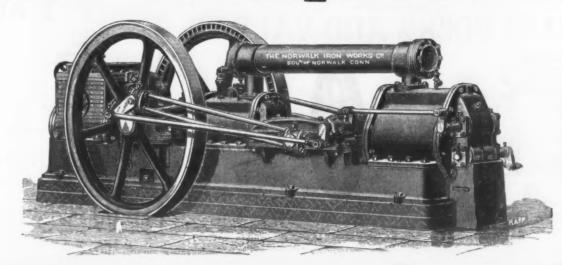


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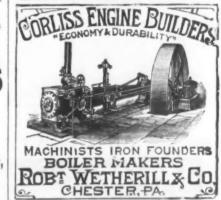
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When it is on you take this metal pin and turn spring. See the boles there?" is spring. See the boles there?"
I does dot vhay, und my screen door flies open."
You turned the wrong vhay."
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"I turns him eafery vhay. Sometimes der door vhas wide open, and all der flies in Michigan go in, und sometimes he vhas ahut oop so tight I can't get in my own house. I begin on him in der mora-

From the Detroit Free Press: He slid quietly into a Jefferson avenue hardware store yesterday forenon, urrolled a paper on the counter, and as he held up a patent door-spring he said:
"I buy him two days ago, und I like to exchange him for a whetstone."
"What's the matter?"
"Whet's the matter?"
"Whet's the counter him fit on my screen door."
"We'll, I can't make him fit on my screen door."

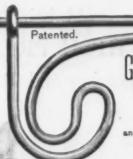
"Well, I'll exchange with you, but I'm sure I ean show you how to adjust it."

"I guess I doan' try any more. You see, my life vhas short, und I can't spare so mooch time mit machinery. If I get a whetatone I doan' hat to acrow him on mor turn-him round Dere vhas no pins or rachets in his stomach. He vhas all right, both ends cop. Maybe he doan' keep oudt files, but he makes no trouble for me."

The exchange was made, and the man went away light-hearted, calling back from the door:

"I can make oudt a whetstone all right, und I vhas obliged mit you. A whetstone winds coponly one vhay."

He ought to have



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